EXPLORING TEACHER CHANGE IN RESPONSE TO A PROFESSIONAL DEVELOPMENT PROGRAM

Angie L. Dyson

A dissertation submitted to the faculty of the University of North Carolina at Chapel Hill in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the School of Education (Department of School Psychology).

Chapel Hill
2007

Approved by:

Barbara Wasik, Ph.D.

Leslie Babinski, Ph.D.

Henry Frierson, Ph.D.

Stephen Hooper, Ph.D.

Steven Knotek, Ph.D.

ABSTRACT

ANGIE DYSON: Exploring Teacher Change in Response to a
Professional Development Program
(Under the direction of Leslie Babinski, Ph.D.)

This study examined the process of change for a group of teachers who took part in the Schools Attuned (SA) Program: a professional development program designed to equip educators with the knowledge and skills to address the diverse learning needs of students. According to the literature on teacher change, the relationships between teacher professional development programs and changes in teachers' beliefs and practices are quite complex. In order to shed light on the change processes triggered by the SA Program, this study drew on techniques of qualitative inquiry to gain an in-depth understanding of how individual teachers changed their behaviors and thinking during their first year of involvement with the program. The research questions driving this study focused on understanding how participants implemented the SA Program and how the program impacted participants' thinking about their students and how students learn. These research questions dealt primarily with *process* as opposed to *outcomes*, making a qualitative approach the most appropriate mode of inquiry. The unit of analysis was the teachers themselves, although the contextual factors that impacted program use were also examined. Findings suggest two paths by which teacher change occurs, referred to as "self-sustained change" and "generative change," and offers a number of implications for teacher professional development programs and future research in the area of teacher change.

ACKNOWLEDGEMENTS

I would like to thank my dissertation committee and colleagues at All Kinds of Minds for their continual support and encouragement as I completed this project. Thank you especially to my dedicated advisor and friend, Dr. Leslie Babinski.

This dissertation would never have been completed without the love of support of my family and friends: to my parents and family for their unconditional love that was never based on my worldly accomplishments; to my brother, Dr. Henry Dyson V, for always setting the bar high and giving my the extra nudge to pursue my goals; to my best friend and kindred spirit, Dr. Hannah B. Harvey, for providing an endless supply of encouragement and coffee; to my dear friend Travis Sitzlar, for his critical eye, excellent proofreading skills, and availability for late night consults; and to my future husband, Nathan Allman, who supplied me with renewed inspiration and encouragement of the spirit for the last leg of this journey. Most of all, I credit this accomplishment to my Lord, Jesus Christ, for "In all the work you are doing, work the best you can. Work as if you were doing it for the Lord, not for people. Remember that you will receive your reward from the Lord, which He promised to his people. You are serving the Lord Christ" (Colossians 3: 23-24). May all my work be praise!

TABLE OF CONTENTS

LIST OF TABLES

LISTS OF FIGURES

Figure Page

LIST OF APPENDIXES

CHAPTER 1

INTRODUCTION

Educational change is often talked about but rarely understood. Reform movements in education have increasingly viewed teachers as change agents having an impact on the academic and social development of children. In a political era focused on ensuring the success of every child, teachers are faced with the challenge of serving increasingly diverse students in regular education classrooms. As a result, teachers are expected to continually adapt their instruction in order to meet students' needs.

Professional development programs have long been viewed as a key avenue for ensuring educators' continued growth in the ability to teach children, shaping their beliefs and attitudes about learning, and effecting positive student outcomes (Guskey, 2002). Yet in order to enact meaningful and lasting change, programs must provide educators with the knowledge and skills necessary for continued growth. Franke and colleagues (1998) have described what they call "self-sustaining, generative change," which encompasses more than providing teachers with a fixed set of skills or techniques to further student learning, but "involves teachers changing in ways that provide a basis for continued growth and problem solving" (p. 67). This type of change builds on the concept of teachers becoming ongoing learners, and often involves changing teachers' understanding of the ways learning occurs in the classroom (Franke et al., 1998). Guskey (2002) has claimed that many professional development programs fall short of inducing a lasting impact because they fail to understand the process by which change occurs. The current study sought to shed light on this change process, examining the intricacies involved in incorporating new ways of thinking and instructing students in a complex school environment.

In this study, a qualitative approach was used to examine the change process educators experienced as a result of participating in a professional development program designed to help

participants understand the many ways children learn. This year-long program, called the Schools Attuned (SA) Program, aimed to equip educators with the knowledge and skills to meet the diverse learning needs of their students. The current study was designed to examine the ways in which educators at one elementary school implemented components of the SA Program in their classrooms and assessed how participants' cognitions changed in regard to students' learning differences and their own roles as educators.

This chapter lays out the basic tenets of the study, highlighting the guiding research questions that provided focus and direction for the inquiry. The second chapter includes a review of relevant discourses, providing a context for how this study fits into the broader context of research on professional development and educational change. The third chapter outlines the specific research procedures for this study, including a rationale for using qualitative inquiry and the procedures used for data collection and analysis. Chapter four describes the specific ways the SA Program was implemented by participants, while the fifth chapter focuses on participants' changes in thinking as a result of the program. The final chapter focuses on study conclusions and implications for professional development programs and future research.

Background to the Study

As a former member of the Research, Program Evaluation, and Information department at All Kinds of Minds, I have taken part in many of the ongoing conversations surrounding the evaluation and research of the SA Program. Several independent research studies have looked at the impact of the SA Program on teachers and students. Findings have suggested that the influence of the program varies greatly between participants (Fiore, 2006). SA principles and curriculum seemed to resonate deeply with some teachers, causing them to integrate SA practices into their overall teaching practices. Other teachers have found aspects of the SA Program to be valuable, but they may not have implemented it exactly as intended by the program developers. Others may have participated in the program, but never made steps to implement it in their classrooms due to various factors, such as competing initiatives in their schools. This has created a problem for outcomes studies that have viewed SA participants as one homogenous group, skewing and diluting findings about program effectiveness. Thus, the current study examined what happened between the initial

teacher training (the SA Core Course) and student outcomes; namely, how did teachers *use* the SA Program, and what was the *process* by which they developed new ideas and practices related to students with learning differences.

Study Overview

This study examined the process of change brought about by a year-long professional development program for a group of teachers at one elementary school. According to the literature on teacher change, the relationships between teacher professional development programs and changes in teachers' beliefs and practices are quite complex. In order to shed light on the change processes triggered by the SA Program, this study drew on techniques of qualitative inquiry to gain an in-depth understanding of how individual teachers changed during their first year of involvement with the program.

The questions driving this study dealt primarily with *process* as opposed to *outcomes*, making a qualitative approach the most appropriate mode of inquiry. The unit of analysis was the teachers themselves, although the contextual factors that impacted program use were also examined. By spending time interacting with and observing the participants, I investigated some of the mechanisms by which SA impacted instructional practices, as well as which factors facilitated or inhibited implementation of program components. I also examined the ways in which the program changed or shaped participants' thinking about student learning and their roles as teachers. This study was not intended to produce conclusive evidence about whether the SA Program "works" or not; instead, it is intended to shed light on the process of change in a complex program designed to equip teachers with the knowledge and skills to enhance the learning of students.

Guiding Research Questions

The questions which guided the research included two primary questions with the following specific subquestions:

1. In what ways was the Schools Attuned implemented by participants?
    - In what ways did teachers who participated in the SA Program implement the program with individual students and their whole class?

- How is Schools Attuned implemented at a school-wide level?
- How do contextual factors in the school influence educators' use of Schools Attuned?

2. In what ways did the Schools Attuned Program impact participants' thinking about students and student learning?

- How does participation in the Schools Attuned Program influence the ways educators think about and work with students with learning difficulties?
- In what ways do educators perceive student change as a result of the Schools Attuned Program?

CHAPTER 2

REVIEW OF RELEVANT DISCOURSES

The Process of Change

This discussion explores the process of teacher change by examining the relationship between three key variables: professional development programs, teacher beliefs and attitudes, and the implementation of new instructional practices. In order to understand how teacher professional development programs result in meaningful change, one should consider the process by which educational change occurs. Many programs have been based on the intuitive idea that professional development leads to changes in teachers' beliefs and attitudes, which prompts them to change classroom behaviors to bring about positive student outcomes (Clarke & Hollingsworth, 2002; Guskey, 2002). Guskey (2002) has argued, however, that professional development programs alone do not bring about teacher change, but it is the change in classroom practices that lead to positive student outcomes which in turn produce a lasting impact on teachers' beliefs. In other words, teachers may try new instructional strategies, but only those practices which result in positive student outcomes lead to enduring changes in teachers' beliefs and attitudes. Guskey's model, represented in Figure 1, has been supported by a number of studies demonstrating that significant changes in beliefs occurs after teachers have had the opportunity to experiment with new methods and experience their success in the classroom.

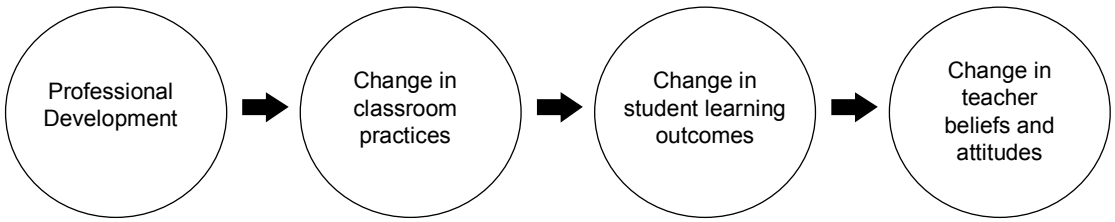


Figure 1. Guskey's Model of Teacher Change

Guskey himself pointed out some of the limitations of his model. First, he has admitted that the process may be cyclical rather than linear (Guskey, 2002). Likewise, in order for teachers to take the leap from the theory of the program to actual change in their classroom practices, they must have some degree of receptivity to the ideas and practices they are being asked to apply (Guskey, 2002). This leads one to consider the role of teachers' beliefs and attitudes that they bring to professional development programs. That is, what beliefs and attitudes contribute to some teachers being more receptive to new programs than other teachers? There are also a number of contextual or situational factors that could impact teachers' use of new practices, as well as whether they observe positive student outcomes. These issues will be explored further in the following discussion.

Professional Development as a Means of Change

More than ever, teachers are faced with the challenges that come with providing effective instruction to highly diverse students. In a discussion about how to help teachers access and use research-based techniques, Boudah, Blair, and Mitchell (2003) stated,

> A critical need exists for increased and improved professional development that has an impact on teacher implementation and sustainability of validated strategies, particularly for addressing the needs of academically diverse classes that include students considered at risk for failure and mainstreamed students with learning disabilities.

Professional development programs first became a major part of teacher education in the United States following the Depression Era (Clarke & Hollingsworth, 2002). At this time, most in-service programs consisted of one-day workshops with minimal follow-up or support. Early training paradigms implied that teachers lacked essential knowledge and skills for effective teaching (Guskey, 1995). Not surprisingly, this model has been shown to be ineffective in producing lasting classroom changes (Clarke & Hollingsworth, 2002). Today, most staff development programs for teachers are based on a "professional growth approach" (Clarke & Hollingsworth, 2002). Programs based on this approach are not intended to repair personal inadequacies, but instead encourage professional growth and learning throughout a teacher's career.

The National Staff Development Council (NSDC) has published standards to guide professional development programs for teachers and other school staff. The NSDC standards

address the context, process, and content of staff development programs in order to identify the specific components necessary to improve the learning of all students (NSDC, 2005). For example, the standards indicate that programs should be data-driven, preparing teachers to apply research to their decision-making processes in the classroom. Staff development programs should also draw on knowledge gained through formative and summative evaluations, as well as the literature based on human learning and change, in order to utilize effective learning strategies that are in line with the program goals. With regard to content, quality professional development programs have encouraged the involvement of students' families, promoted quality teaching guided by research-based strategies, and ensured equity and high expectations for all students. Finally, the standards state that effective staff development occurs in contexts where adults are organized into learning communities with skillful leaders and the necessary resources to support learning and staff collaboration (NSDC, 2005).

The literature on teacher development programs and the standards set forth by the NSDC have clearly communicated that professional development involves more than simply transferring content knowledge to participants: Quality programs provide a framework which allows for ongoing learning and development. Providing teachers with an empirically based framework to guide decision making in the classroom has the potential to have a lasting impact on teachers' instructional practices. In a review of how teachers' perspectives about child development affect classroom practices, Daniels and Shumow (2003) emphasized how teachers' views about learning shaped what they did in the classroom, which then influenced the ways students viewed themselves as learners (Daniels & Shurnow, 2003). Daniels and Shumow have argued that by providing teachers with a framework from which to base decisions and understand students' learning, their beliefs and practices can become more sophisticated.

Historically, professional development programs have been designed to create behavior changes in teachers that lead to student gains (Wade, 1984). A meta-analysis of in-service programs for teachers in the early 1980s showed that programs were highly effective in increasing teacher learning, moderately effective in changing teachers' behaviors, but only mildly effective in demonstrating student improvements as a result of the programs (Wade, 1984). Over twenty years later, we still have difficulty understanding the processes by which teacher learning results in student

improvements. The current study looked at one school's response to a professional development program in order to explore some of these connections. While this study alone was not designed to yield conclusive evidence about the long-term impact of the program, it sought to bring clarity to the relationship between teacher learning and student improvement.

While the ultimate aim of professional development programs is to improve the learning of all students, the intermediate steps in the process should not be ignored – namely, how teachers learn and how this knowledge affects what goes on in the classroom. In order to discern the ways professional development programs lead to teacher and student change, one must explore the complexities of teachers' beliefs and attitudes. The following section elaborates further on the construct of teacher beliefs and how cognitions are shaped and changed through educational experiences such as professional development programs.

The Roles of Beliefs and Attitudes in Teacher Change

Advances in professional development programs have led researchers to consider the ways teachers' thinking changes as a result of professional development. Rather than focusing merely on student outcome data or self-report measures of satisfaction, researchers and evaluators have begun to see the need for delving deeper into the thought processes of teachers implementing educational innovations. Understanding how teachers think about their teaching and their students' learning has opened the door to understanding why some professional development programs are effective while others quickly retire to the category of educational fads.

Researching beliefs. Understanding teachers' beliefs and how these beliefs affect classroom practices is complicated. Pajares (1992) claims that, as a construct, "belief" does not readily lend itself to empirical study. While personal belief systems are important in shaping how people think and behave, beliefs are also highly complex and difficult to measure (Pajares, 1992). One challenge in studying belief systems has arisen from the difficulty of distinguishing "beliefs" from similar constructs, such as "knowledge" and "attitudes" (Hofer & Pintrich, 1997). Along the same lines, beliefs may be domain specific; for example, references to teachers' beliefs typically refer to their *educational* beliefs, rather than their *overall* belief systems (Pajares, 1992). Researchers must not only understand the

specific domain of belief being studied, but they must be mindful of the connections and interactions between belief substructures and the more central belief system (Pajares, 1992).

Beliefs are also difficult to study because assertions about one's belief system must be inferred. Researchers cannot rely only on self-report because teachers may not have the language to describe their educational beliefs, or they may be unwilling to voice beliefs that are unpopular or contrary to the generally acceptable beliefs in their teaching communities (Kagan, 1990). Researchers who wish to understand an individual's belief system may not gain an accurate or complete picture through interviews or observations alone. Pajares (1992) suggested that researchers should assess what a person says, what she intends to do, and what she actually does in order to make inferences about her belief system.

Conceptual change. When studying teacher cognitions in the context of professional development programs, it is not only important to assess how teachers think, but it is also important to understand how teachers' cognitions change in response to the program. Most scholars have agreed that conceptual change in adulthood is rare (Fang, 1995; Pajares, 1992). Belief systems appear to develop at a young age, and people are more inclined to perpetuate existing beliefs or, using Piagetian terms, assimilate new ideas or experiences into existing schema rather than changing one's belief structures (Pajares, 1992). Change is possible, nonetheless, and often brought about through meaningful educational experiences (Hofer & Pintrich, 1997). Hofer and Pintrich (1997) proposed that, in order for conceptual change to occur, a person "must be dissatisfied with existing beliefs, must find the alternatives intelligible and useful, and must see a way to connect new belief with earlier conceptions" (p. 123). While these conditions do not account for contextual or motivational factors that may also contribute to a teacher's readiness to adopt new beliefs, they do illuminate some of the processes that may occur in teacher learning. For example, Sandoval (2003) based his discussion of consultee change on these principles. In the initial phases of the consultation process, the consultant and consultee (teacher) work to identify the problem and may explore how the consultee's current explanatory theories for the client's problem are inadequate. They then work together to develop solutions that are acceptable to the consultee and, ideally, solutions in which she

is personally invested. Through this process, alternative solutions build on the consultee's current levels of skill and knowledge.

Beliefs and the adoption of new practices. A number of specific beliefs and attitudes have been discussed frequently in the literature as being related to teachers' adoption of new innovations. Teacher self-efficacy, or the confidence teachers have in their ability to impact students and handle situations in the classroom, appears to be related to their willingness to take risks by trying new practices in the classroom. In a study in which teachers were trained in research-based instructional practices, teachers who adopted new practices had higher levels of self-efficacy (Sparks, 1988). Likewise, Guskey found that teachers who expressed high personal efficacy and felt confident in their teaching abilities were most receptive to implementing new instructional practices compared to teachers who did not express high self-efficacy (Guskey, 1988). One plausible explanation for this correlation is that teachers with high self-efficacy are actually highly effective teachers who already incorporate many of the instructional practices promoted by professional development programs. This points to the concept of congruence. Congruence, or how well new practices are aligned with teachers' current practices and philosophy, has also been considered to be an important factor that influences teachers' likelihood to adopt new teaching practices (Guskey, 1988). For example, Sparks (1988) found that teachers who viewed new instructional practices taught in a professional development program as important and aligned with their own teaching philosophies were more likely to use them. Investigating teachers' specific attitudes towards educational innovations, such as efficacy and congruence, can help researchers and teacher educators understand some of the variability in teachers' receptivity to using new practices. Understanding what teachers bring to a professional development program, including their own educational philosophy and how they view themselves as teachers, appears to be an important consideration in the change process that is not explicit in Guskey's model presented in Figure 1. Specifically, a more precise representation of teacher change would account for the beliefs and attitudes that teachers bring to a professional development program and how they impact changes in classroom practices.

Effective professional development is not only about the new strategies teachers adopt, but "ideal" change involves shaping the ways teachers solve problems in the classroom and giving

teachers a basis for continued growth. As describe in the introduction, the concept of *self-sustaining, generative change* is deeper and more involved than simply implementing a new set of instructional practices, but it actually gives teachers a new framework with which to analyze student learning (Franke, Carpenter, Fennema, Ansell, & Behrend, 1998). While this level of change may be a gold standard for teacher professional development, it comes with a number of methodological challenges for researchers and evaluators.

Research implications. An understanding of the complexity of teachers' educational belief systems has several implications for research. First, studies assessing teacher beliefs should clearly define the beliefs under investigation. For example, the current study focused on educators' beliefs about students' learning difficulties and the effective teaching of diverse students. Secondly, a simple self-report measure of teacher beliefs would likely not be sufficient for understanding the role teacher cognitions play in classroom practice, based on the reasons cited above. Data triangulation is essential for developing a meaningful understanding of the connections between teachers' cognitions and classroom practices (Kagan, 1990).

As mentioned before, change in belief is difficult to measure due to the unreliability of traditional self-report measures (Kagan, 1990). It is not enough to make assumptions based entirely on what teachers say. Yet observations alone only offer a single perspective and do not necessarily reflect the teachers' intentions and goals. Multi-method approaches are most appropriate for studies designed to answer questions involving the complexities of teacher belief change (Kagan, 1990).

Implementing New Instructional Practices

Educational change is not easy. Sustainable change in a school setting takes time and requires the cooperation and involvement of both teachers and administrators (Curtis & Stollar, 1996). According to Guskey's model of teacher change (see Figure 1), in order to significantly influence teachers' beliefs and attitudes through a professional development program, a teacher must first apply components of the program in the classroom and then observe the merits of the new practices firsthand (Guskey, 2002). But the question remains: How do teachers make the leap from participation in a staff development program to implementing new practices in the classroom?

A concerns-based approach to teacher change. In response to the failure of many educational innovations to achieve widespread adoption in the 1960s, researchers at the Research and Development Center for Teacher Education at the University of Texas at Austin proposed the Concerns Based Adoption Model, which identifies four key assumptions about change (Hall, Wallace, & Dossett, 1973; Loucks & Pratt, 1979). First, change is a process – an innovation that is notably different from current practice typically requires several years for individuals to implement (Loucks & Pratt, 1979; Paul & Volk, 2002). Second, change is accomplished by individuals – in order for institutions to change, individuals within the institution must change. Change is also personal, implying that the change process is influenced by individuals' perceptions, feelings, and motivations. Finally, as change occurs, individuals show development in their feelings and attitudes towards the innovation, as well as in their skills related to program use.

The Concerns Based Adoption Model defines adoption as involving "a multitude of activities, decisions, and evaluations that encompass the broad effort to successfully integrate an innovation" (Hall, Wallace, & Dossett, 1973, p. 5). The model proposes seven levels of use of the innovation, ranging from *No Use* and *Orientation* when participants are acquiring initial information about what the program involves to the *Integrated* and *Reviewing* levels when participants collaborate with colleagues and seek new ways to enhance their use of the innovation. Hall and colleagues also stipulated that there are seven different stages of concern that teachers experience when grappling with a new instructional practice. These stages reflect a developmental continuum on which teachers progress from self concerns (e.g., "Am I able to do this?") to task concerns (e.g., "How do I present this to the class?") to concerns about the impact on students (e.g., "Will my students with language difficulties be able to understand this activity?") (Loucks & Pratt, 1979). Hall and colleagues described the levels of use and stages of concern as being part of the same developmental process. Ideally, teachers should be a step or two ahead in the stages of concern compared to the level of use, which drives them to continue progressing along the continuum (Hall, Wallace, & Dossett, 1973). It is important to note that this growth process is both complex and cyclical (Hall, Wallace, & Dossett, 1973). For example, in the SA Program, a teacher may be at one level when working with individual students, but at another level when it comes to differentiating instruction for the whole class. Hall and

colleagues warned readers about the complexity of the change process and emphasized that determining a teacher's level and stage requires direct observation and careful analysis of participant interviews. Understanding the ways that individuals progress through various levels of use and stages of concern regarding new instructional practices adds to our understanding of why individuals vary in their responses to an innovation at any given point in time. This also has implications for adapting implementation support based on teachers' stage of concern.

Bitan-Friedlander, Dreyfus, and Milgrom (2004) conducted a study that looked at the extent to which teachers implemented an innovation compared to the teachers' "stage of concern" at the end of the study. They found that participants' stage of concern scores were more dispersed at the end of the two-year training period compared to earlier phases of the study. In other words, while many teachers expressed similar types of concerns at the beginning of the training, they diverged through the course of the program so that participants were at different stages along the continuum of concerns by the end of two years. Time was a necessary condition for many teachers in this study as they worked through various phases of assessing the task and became more comfortable incorporating it into their routine. However, not all teachers reached full implementation, even after two years. Another interesting finding from this study was that teachers tended to react to the task of implementing the innovation rather than reacting to the innovation itself. That is, the researchers found that teachers' attitudes towards implementation had a bigger impact on their adoption of the innovation than their acceptance of the actual innovation. These findings have strong implications for the importance of ongoing implementation support that directly addresses teachers' practical concerns about adopting new instructional practices.

Internal factors in teacher change. In addition to teachers' concerns about the innovation itself, other internal and external factors may influence whether teachers adopt new instructional practices. While there has been some consensus that beliefs affect behavior (Pajares, 1992), a number of studies have highlighted the inconsistency between teachers' educational beliefs and their behaviors in the classroom (Brighton, 2003; Duffy & Anderson, 1984; Fang, 1996). Brighton (2003) identified some of the internal factors that shape teachers' openness to changing their teaching practices, including their personal history, knowledge of the content being taught, pedagogical

content knowledge, and their own self-efficacy as it relates to teaching. In a study examining the effects of teacher beliefs on a professional development program that promotes differentiating instruction and assessment, Brighton found that there was a gap between teachers' expressed enthusiasm for the program and their observed classroom behavior. Through teacher interviews and observations, Brighton identified several prominent beliefs that appeared to conflict with teachers' use of the program. She highlighted the importance of acknowledging and building on the existing beliefs teachers hold when implementing a new approach and redirecting conceptual misunderstandings teachers have that may impede their progress in the change process (Brighton, 2003).

In a study looking at how teachers responded to a reading curriculum called Success for All, Datnow and Castellano (2000) asserted that school change is rarely linear and is typically not implemented as it was intended by the program developers. They found that almost all the teachers who participated in the study made adaptations to the innovation, despite their level of support for the program. Teachers' feelings and attitudes towards the program, however, ultimately influenced their acceptance or rejection of the innovation (Datnow & Castellano, 2000). In particular, many teachers expressed reservations about the program because it was developed externally and limited teachers' autonomy and creativity; these feelings and concerns reportedly contributed to the personal adaptations some teachers made to the Success for All curriculum. However, despite these concerns, the teachers involved in the study indicated that they implemented the program because of its perceived benefit to students. Although they did not personally agree with or enjoy all aspects of the program, it was apparently worth the "cost" in return for student improvements. Clearly, teachers' acceptance of and involvement in the change process is complex and influenced not only by their beliefs about the innovation, but also how they perceive themselves as teachers and the effect of the innovation on students.

Contextual factors in educational change. In addition to the internal characteristics of program participants, the external context in which staff development efforts take place can also impact the change process. Characteristics of the educational community and school culture can contribute to teachers' acceptance of or resistance to change. In school settings, gaining teacher buy-in to new programs or school-wide initiatives is vital to the survival of the program (Datnow &

Castellano, 2000). Contextual factors, such as administrative pressures or the attitudes of colleagues, may impact how teachers' beliefs are translated into classroom practice (Fang, 1996). Likewise, a school's resources, assessment policies and procedures, and district objectives play a major role in the success of professional development programs (Friel & Bright, 2001). The National Staff Development Council Standards include a whole category of "Context Standards," emphasizing the importance of developing adult learning communities with the resources and leadership to support learning and staff collaboration (NSDC, 2005).

Clarke and Hollingsworth (2002) have illustrated the multiple levels on which school context influences professional growth. The context plays a part in both the amount of access educators have to professional development programs and the types of programs that are available and supported by the school leadership. The school context also defines the extent to which educators are encouraged to experiment with new instructional practices and the types of teaching techniques that are acceptable within a specific teaching community. Finally, the long-term application of educational innovations is shaped by the school environment and numerous situational factions that may occur.

Boardman and Woodruff (2004) conducted a study that examined the ways teachers implemented a new approach for teaching reading comprehension. During initial interviews with a group of teachers who participated in the professional development program, they became interested in the role of state-wide achievement testing on teachers' ability to learn new teaching methods. They found that teachers who were in a school environment that put great emphasis on state testing used the test as a reference point when considering new instructional practices. Teachers who saw the new reading strategy as a way to support testing (e.g., contributing to higher test scores or as a method to teach to the test) used the new strategy in either a full or limited capacity. On the other hand, teachers who viewed the new practice as something that did not support testing (e.g., a competing force) did not use the new teaching approach, or they used it in a very limited fashion. Consistent with other research on this topic, Boardman and Woodruff's study suggested that professional development programs are most effective when they are aligned with teachers' daily activities in the classroom (Boardman & Woodruff, 2004).

Professional communities have been identified in the literature as being a mediating variable that can affect the ability of school organizations to address student needs (Grodsky & Gamoran, 2003). Professional communities in schools have been defined as a group of educators who work collaboratively and engage in reflective dialogue with a shared purpose and focus on student learning (Grodsky & Gamoran, 2003). Grodsky and Gamoran highlighted many benefits of a strong professional community within a school, including the positive effect on staff morale, teaching efficacy, and collaboration. Some have suggested that a school's professional community can be strengthened through professional development programs by enhancing teachers' shared knowledge base while also strengthening the social ties among educators and promoting a greater sense of community (Grodsky & Gamoran, 2003).

Staff development programs that capitalize on a school's professional community have appeared to have a greater school-wide effect than programs that targeted individual teachers only (Klonsky, 2002; Morris, Chrispeels, & Burke, 2003). In other words, programs that facilitated collaboration, professional dialogue, and shared goals among teachers from the same school or professional community tend to have a positive effect.

The power of professional communities to derail professional development efforts should also not be underestimated. Yamagata-Lynch (2001) found that "communities of practice" were important in schools for understanding which practices are legitimatized and which ones are not. This is important to professional development programs since the purpose behind most programs is to introduce and legitimize new practices into the teaching community (Yamagata-Lynch, 2001). Printy (2004) asserts that communities of practice play a major role in how educators gain knowledge, develop attitudes and beliefs, and refine instructional practices. In her study of the professional impact of communities of practice, Printy found that informal leadership at the peer level was more important in shaping teachers' beliefs and instructional practices than leadership provided at the administrative level. Printy also points out that communities of practice do not seem to be a school-level variable; that is, there may be multiple communities of practice within one school, and teachers may belong to more than one community. Recognizing and understanding the potential impact of a

professional community with regards to the adoption of educational innovations is critical, whether studying individual or school-wide change.

Implementation fidelity. In light of the contextual and situational factors that influence how teachers make decisions and attempt innovations in the classroom, it is not surprising that the outcomes of professional development programs are complex and difficult to interpret. We know that educational innovations are often not implemented as designed when teachers are faced with the realities of the "real classroom" (Datnow & Castellano, 2000; Kagan, 1990). But how good is good enough? How do researchers and program evaluators account for implementation fidelity?

Implementation fidelity is a frequent topic in the consultation literature. Several studies have demonstrated that implementation of new strategies is typically high immediately following consultation, but quickly drops within only a few days (Mortenson & Witt, 1998; Noell, et al., 2000). However, providing teachers with follow-up support and performance feedback have been shown to be effective for improving implementation fidelity (Noell, et al., 2000). While the methods of providing implementation support may differ somewhat in the context of a professional development program compared to the one-on-one consultative relationship, the principles still hold true (Curtis & Stollar, 1996). In particular, teachers are faced with numerous demands and pressures throughout the school day, and implementing new practices is hard work. Clearly, the type and level of implementation support is a critical component of the overall change process.

Summary. Implementing new instructional practices is a process. The literature has indicated that numerous factors – both internal and external to a particular educator – are likely to influence her willingness and ability to incorporate new teaching strategies in the classroom setting. Yet, in order to deliver professional development programs for teachers that are meaningful and effective, it is crucial to understand this change process. The current study looked at a particular professional development program designed to influence teachers' knowledge and instructional practices associated with students' learning differences. The study specifically addressed the change process participants' experienced with regard to their implementation of new strategies and techniques in the classroom, as well as changes in their thinking about student learning. However, in order to understand the types of changes participants experienced during the course of this study, it

is important to first understand the basic premises and structure of the program. The following section provides a description of the Schools Attuned Program in which study participants took part.

The Schools Attuned Program

The Schools Attuned Program is a year-long professional development program designed to "equip teams of educators with new knowledge, skills, and strategies so that sound, defensible professional judgments can be made about instructional practices with struggling learners" (All Kinds of Minds, 2005). Key principles of the program are listed in Table 1. The Schools Attuned Program strives to change teaching practices in order to have a positive impact on student outcomes (All Kinds of Minds, 2005). Through the course of the program, participants learn about eight neurodevelopmental constructs that affect learning and develop an understanding of the neurodevelopmental demands placed on students in school. Participants also learn to systematically observe students' strengths and weaknesses and use that information to develop effective management plans for struggling learners. In the classroom, the program has the potential to help teachers meet students' academic needs through a better understanding of each child's learning profile and how to accommodate and strengthen a child's learning. On the school and district levels, the program aims to develop teams of problem solvers who are able to support professional dialogue regarding learning differences and help teachers incorporate Schools Attuned practices in their instruction.

Table 1

Schools Attuned Principles

Key Schools Attuned principles
1. A positive view of neurodevelopmental diversity
2. A stress on neurodevelopmental profiles
3. A quest for specificity and individuality in understanding students
4. A policy of labeling observable phenomena rather than children
5. A commitment to collaboration among professionals, parents, and children
6. A desire to strengthen the strengths and affinities of children
7. A belief in the value of "demystification" (the process of making students aware of their specific breakdowns in learning as well as their strengths and affinities)
8. A consistent effort to help students learn about learning
9. An infusion of optimism for children with all kinds of minds

The SA Program is taught using a constructivist approach, drawing from current research on adult learning and the standards for professional development from the National Staff Development Council (All Kinds of Minds, 2005). The content is delivered through a variety of methods, including small group work, case studies, videos, readings from books and articles, demonstration and practice of the tools and processes, preparation for implementing aspects of the program in the school setting, and ongoing professional dialogue. One key process taught during the course is called "Attuning a Student." Participants are provided with the tools to systematically observe students who are struggling in school, describe students' strengths and weaknesses through careful observation, collaborate with the student and the students' parents, and analyze students' work samples. This data-driven process allows teachers to describe the students' learning profile and develop a management plan with accommodations and interventions designed to help the student be more successful in school. Through a process called "demystification," the SA participant learns how to talk to students and their parents about the child's learning profile and management plan. This

comprehensive process is designed to help educators make sound, professional judgments that help all students be successful in school (All Kinds of Minds, 2005). In order to more clearly define what implementation of SA "looks like," the Research, Program Evaluation, and Information team at All Kinds of Minds worked with program developers to create the Innovation Configuration (IC) Map: a tool describing the observable components of the program. The IC Map was designed to outline the core components of the implementation of Schools Attuned for both the teacher and student (see Appendix A for a full copy of the IC Map). The map includes twelve components for teachers and six for students (see Table 2). This document was used to guide the study of implementation in this research.

The program itself includes a Core Course with a minimum of 35 instructional hours over the course of five days and at least 10 hours of follow-up experiences, called Practicum. Ongoing online learning support is also available to participants. The participants included in this study attended the Core Course during the summer prior to the 2005-06 school year, followed by five Practicum sessions (2 hours each) throughout the school year.

The SA Program is delivered through several different models, including regional training sites, an on-demand model, and state and district initiatives. The school participating in the current study is part of the North Carolina Schools Attuned Program. Through a partnership with the North Carolina Department of Public Instruction, teams of educators from across the state are able to take part in the program. As part of the state initiative, the program is adapted to meet the priorities of the state's public school system with a goal to "build the capacity of public schools to address the learning differences of their students by developing a team of school leaders" (All Kinds of Minds, 2005). To this end, North Carolina public schools that wish to participate must send a team of educators to participate in the program and commit to having a significant number of school-based educators trained over several years (including someone in a leadership position), take time to plan as a school team, and work to incorporate the philosophy and practices of the program throughout the school (All Kinds of Minds, 2005). The school selected for this study met these requirements and proved to be a fruitful setting for exploring how the program impacted the school as participants worked to incorporate SA philosophy and practices.

Table 2

Components Included in the IC Map for Schools Attuned Implementation

Innovation Configuration Map Components
Teacher Components
1.0 The teacher describes specific student learning behaviors using neurodevelopmental concepts.
2.0 The teacher uses the Attuning a Student process and materials to support data-driven hypotheses about individual student learning.
3.1 The teacher plans demystification sessions.
3.2 The teacher demystifies students individually (one-on-one) over one or more sessions.
4.1 The teacher selects and/or adapts accommodations and interventions to enhance learning of all students, i.e., implementation breadth across the classroom.
4.2 The teacher selects and/or adapts accommodations and interventions based on one or a few students' neurodevelopmental profiles, i.e., depth of implementation among one or a few students.
5.0 The teachers differentiates instruction based on neurodevelopmental understanding of the curriculum.
6.0 The teacher identifies opportunities for and engages in activities to strengthen students' neurodevelopmental strengths.
7.0 The teacher uses a variety of indicators to measure academic progress of students that take into consideration students' neurodevelopmental profiles.
8.0 The teacher engages in "learning about learning" based on the neurodevelopmental framework.
9.0 The teacher creates a classroom climate that protects students from humiliation.
10.0 The teacher involves parents/guardians/caregivers in understanding aspects of their child's neurodevelopmental profile.
11.0 The teacher collaborates with colleagues in the implementation of Schools Attuned.
12.0 The teacher pursues ongoing professional learning opportunities related to the neurodevelopmental framework.
Student Components
1.0 The student demonstrates an awareness of his/her learning within a neurodevelopmental framework.
2.0 The student engages in the learning process.
3.0 The student expresses optimism about self as a learner.
4.0 The student supports others' learning and success in school.
5.0 The attuned student participates in the management of his/her neurodevelopmental profile.
6.0 The attuned student initiates engagement with others regarding productive self-advocacy about his/her learning.

Implications for Research

Though teacher change has been a topic in the literature for several decades, one can reasonably conclude that it remains a complex and "messy" construct. Professional development programs are one of the most frequently used mediums for transferring research-based ideas and practices to educators in schools in order to enhance the learning of all students. Yet the process by which educational change actually occurs is far from simple. Guskey's model of teacher change was presented at the beginning of this discussion (see Figure 1). Guskey has proposed that professional development programs provide teachers with new instructional techniques that change their classroom practices. Once teachers experience how these new practices have a positive impact on students' learning, they incorporate the practices into their repertoire of teaching behaviors, thus shaping their own beliefs and attitudes about teaching (Guskey, 2002). Guskey presented this process of change in a linear fashion, but the literature reviewed in this discussion has suggested that this process is more complex. First, when teachers participate in professional development, they bring with them a host of previous experiences and beliefs about their role as educators. These beliefs and attitudes not only influence how they view the content of the program itself, but they appear to impact the teachers' likelihood to adapt their own classroom practices to incorporate new techniques. Furthermore, a number of contextual and situational factors may influence a teacher's willingness or ability to change classroom practices. The level of a teacher's implementation fidelity for an innovation then impacts the degree of change in student learning outcomes. Finally, the level of ongoing implementation support will also influence how teachers change and the degree of change in student outcomes. Figure 2 reflects a proposed model of how teacher change may occur, accounting for the elements in this discussion.

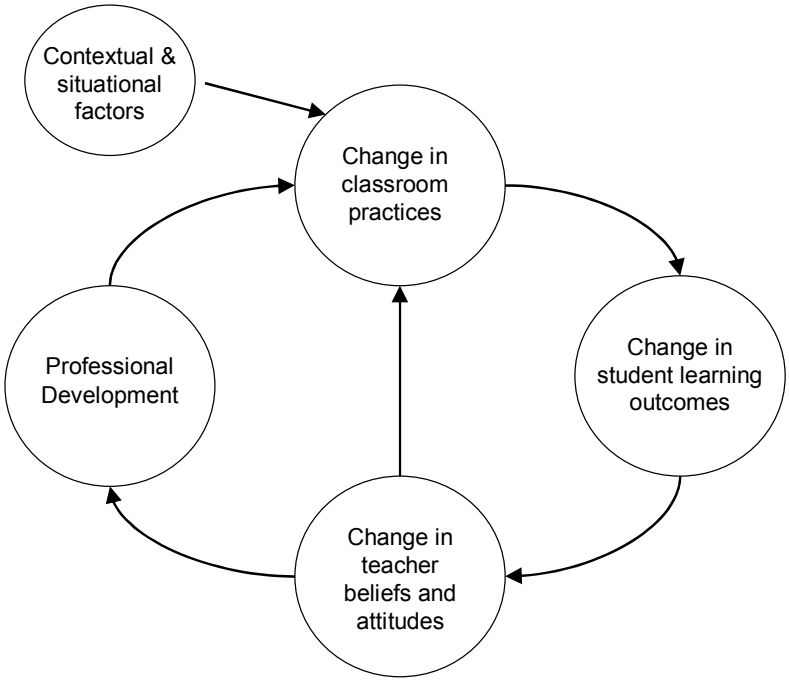


Figure 2. A proposed model to describe teacher change

This study explored how the change process occurred for teachers involved in the SA Program using a social constructivist approach. Specifically, after taking part in a professional development program, participants' changes in teaching behavior and changes in thinking were examined over the course of a year. Not only did the study address shifts in educators' classroom practices and their beliefs about learning, but it also assessed the contextual and community factors that were involved in participants' learning process. Therefore, implementation was studied in terms of which program components were readily incorporated into participants' teaching repertoires, and what factors impacted their willingness or ability to implement aspects of the program. The study also explored teachers' perceptions of how new instructional practices impacted student learning outcomes and how these changes shaped their beliefs and attitudes about learning differences. Chapter three focuses on the research methodology used to address these questions and examine this process of change for participants in the study.

CHAPTER 3

METHODOLOGY

This chapter examines the methodology used to explore the ways in which this change process occurred for participants who took part in the Schools Attuned (SA) Program. The discussion begins with a rationale for why qualitative methods are appropriate and necessary for the research questions being explored. I then discuss details related to site and participant selection and the broader school context to which the SA Program was introduced. Finally, each of the various data collection techniques used in this study are discussed, as well as how data were analyzed to address the guiding research questions laid out in the first chapter.

Rationale for Qualitative Inquiry

The focus of this study was to investigate the change process educators experienced during their participation in the Schools Attuned Program. The concept of change, as presented in the literature, is both complex and difficult to measure. Yet, an understanding of how professional development programs result in positive teacher and student outcomes is essential in order for programs to be improved and worth the financial and time investment.

This research study was designed to gain an in-depth understanding of the change process for a subset of educators from one school participating in the SA Program. Through comprehensive interviews and direct observation, this study explored the ways educators' beliefs and practices changed in response to the program, as well as the contextual variables that influenced the program's efficacy. A qualitative approach was deemed the most appropriate based on the study's guiding research questions, as "qualitative methods facilitate the study of issues in depth and detail" (Patton, 2002, p. 14). By using multiple data collection strategies, this study aimed to shed light on the process by which professional development programs lead to changes in teachers' beliefs and practices.

In Kagan's discussion of ways to evaluate teacher cognitions, she indicated that a multi-method approach utilizing triangulation was the most appropriate strategy for capturing the complex aspects of teaching and learning (Kagan, 1990). Other studies that have ventured to understand the connections between teachers' beliefs and practices have also promoted a qualitative approach (Hoffman, 2003; Pajares, 1992). As mentioned in the previous discussion on teacher thinking, beliefs and attitudes cannot always be assessed directly because of individuals' reluctance or inability to verbalize their own belief systems; reliable inferences about individuals' beliefs should be made through a combination of self-report, direct observation, and an understanding of relevant contextual factors (Kagan, 1990; Pajares, 1992). This study made use of a variety of data collections strategies in order to triangulate findings and increase the trustworthiness of the study's conclusions. The following sections describe the school and participants selected for this study, as well as the methodology for collecting, analyzing, and insuring the credibility and trustworthiness of the data.

The School Site and Participant Selection

School site. Participants included educators from one public elementary school in a small, rural town in central North Carolina. This school was identified by the SA Program as meeting the following eligibility requirements: (a) participating in the SA Program for the first time (i.e., no teachers have been previously trained in the program), (b) located within a two hour drive of Chapel Hill, NC, and (3) having administrative support to participate in a research study. These criteria were put in place to facilitate entry into the school and minimize confounding factors of having teachers who have already had direct experiences with the SA Program.

Participant selection. The primary focus of this study was on the educators who participated in the SA Program. Ten educators from the selected school participated in the Schools Attuned Core Course in the summer of 2005. The North Carolina Schools Attuned Program has required that teachers from the same school participate in the program as a cohort (typically 6-8 educators); the sample size for this study was dependent on the space available in the program. The decision was made to study educators from one school in order to investigate the influence of SA on individual teachers, while also accounting for contextual factors and school-level changes that affect the implementation and impact of the program. All ten of the participating educators agreed to take part

in this study. Participants included six classroom teachers in grades 1 through 3 (two teachers in each grade), two Title 1 teachers who taught inclusion and resource classes for students in grades 1 to 4), a speech therapist, and the school principal. Participants ranged from having 1 to 25 years of teaching experience, with a mean of 10.11 years experience. In addition to the school principal, six of these educators were selected to participate in the program because of their involvement with the school's Assistance Team. This selection criterion is consistent with the goals of the North Carolina Schools Attuned Program, which strives to make an impact in public schools by developing teams of school leaders that have the potential to influence school-wide practices (All Kinds of Minds, 2005). The remaining three participants were selected at random from a pool of classroom teachers who expressed an interest in the program.

In addition to SA participants, seven other teachers who had not taken part in the SA Program were asked to be a part of this study in order to serve as a comparison group. Of note, participants were selected from a pool of teachers who had expressed an interest in taking part in the SA Program but unable to attend during the 2005-06 school year due to limited space. Non-SA teachers were initially invited to take part in study after being matched to SA participants based on the grades they teach and years of teaching experience. However, recruiting non-SA participants was more difficult than expected, as many teachers indicated they were too busy to take part in the study. The non-SA participants selected to be in the study included one 1st grade teacher, three 2nd grade teachers, and three 4th grade teachers. Participants had 1 to 32 years teaching experience, with a mean of 9.43 years experience. Non-SA participants served as a comparison group, but also provided information about the overall school context and any "spill-over" effects of the SA Program. In other words, while they functioned as a comparison group, participants were exposed to some aspects of the SA Program because other teachers in the school took part in the program.

The School Context

In order to draw conclusions regarding the implementation of an educational innovation, it is first important to understand the school context in which the program is being introduced (Patton, 2002; King, Morris, & Fitz-Gibbon, 1987). This section includes a description of the student population, school staff, and administration for the school involved in this study.

Student population. During the 2005-06 school year, Bentley Elementary (pseudonym) had a total of 560 students in pre-kindergarten through fourth grade. Fifty-five percent of students were White non-Hispanic, followed by 20% Black, 18% Hispanic, 6% multi-racial, and less than 1% Asian and Indian (BES, 2005). Sixty-two percent of students received free or reduced lunches in the 2004-05 school year, which serves as an indicator of families' socio-economic status (BES, 2005). Additionally, 11% percent of students were classified as migrant students in the 2002-03 school year (Great Schools, 2006). Approximately 4% of students were identified as having Limited English Proficiency (BES, 2005). Fourteen percent of students received services through the Exceptional Children's Program (special education), and 6% were included in the Academically-Intellectually Gifted Program (BES, 2005). The principal indicated that the student body had grown by 200 students over the past two years, and the school was experiencing a growing population of students with limited English proficiency.

Interviews with the school principal revealed that Bentley Elementary has a large number of students who are struggling in school, but when referred for psychological evaluations, they had a tendency to score in the low average or borderline range on intelligence tests and not qualify for special education services. Several participants referred to these students as "slow learners" or "children who fall through the cracks." The principal also described how many of the students come from "low literacy homes" that typically do not provide a strong support for education. During the 2004-05 school year, only 27% of students referred to the special education program qualified for services. In other words, 73% percent of students identified by classroom teachers or the Student Assistance Team as needing additional support in the classroom did not meet the state's eligibility requirements for a specific disability, and therefore did not qualify to receive any additional services through the special education program. However, several programs were in place to support students struggling in school. Because the school was classified as a Title 1 school, additional funds were allocated to provide extra support for students at risk for school failure. These funds were used to employ additional teachers who served in both resource (small group) and inclusion classes to support students in the regular education program who were struggling in school. The school also had an after-school program with a joint focus on academics and character development.

School staff. During the 2005-06 school year, Bentley Elementary employed 29 classroom teachers (K-4), 15 regular education teaching assistants, 4 special education teachers, 4 special education assistants, 5 Title 1 teachers, 2 English as a Second Language (ESL) teachers, 5 Connect teachers (e.g., art, music), 2 administrators, 3 administrative assistants, 1 school counselor, and 6 part-time support staff members (e.g., psychologist, speech language pathologist). All teachers served on at least one school team, such as the school improvement team, parent involvement team, reading team, or academically and intellectually gifted review team. The staff turnover for the 2005-06 school year was only 8%, and processes were reportedly in place to insure that teachers felt supported in their roles. For example, early career teachers were paired with more experienced teachers who served as mentors. Also, the teachers from each grade level met on a weekly basis in order to collaborate and support each other in their teaching and developing strategies for struggling students.

The school principal was the primary contact person for gaining entry into the school to conduct research. He was also highly involved in the school's participation in the SA Program, describing his role with Schools Attuned as "facilitator" and "supporter" to the other participants from the school. He was observed to be an active leader in the school, often observed to state and reiterate the school's goals and vision. He reported spending about 60-70% of his time during a typical day in various classrooms throughout the school. Based on teacher reports and observations, it was common for the principal to "pop in" to classes to observe teaching and student learning.

Issues of Reciprocity

As part of a larger effort to recruit schools to participate in the Schools Attuned Program and take part in research, All Kinds of Minds provided the school with $1200 as compensation. Additionally, each participant received a $50 stipend in order to thank them for their participation and time investment. This compensation was put in place to facilitate the data collection process by assuring participants that their input and contribution to this study is both important and appreciated.

Data Collection Strategies

Data collection focused on triangulation in order to build the validity and trustworthiness of the data (Glesne, 2005). Interviews, observations, problem-solving vignettes, concept mapping, questionnaires, historical data, and program evaluations provided abundant data for exploring the ways in which Schools Attuned led to teacher and school change. Each strategy has certain strengths and was used to investigate a particular aspect of the change process. The information gathered from each strategy was triangulated to insure data quality. Table 3 provides a summary of the data collection strategies, including the type of information gathered by teach strategy and the research question each technique was designed to address. As noted in Chapter 1, this study addressed two primary research questions: (1) In what ways was the Schools Attuned implemented by participants (noted as "Implementation" in Table 3), and (2) In what ways did the Schools Attuned Program impact participants' thinking about students and student learning (noted as "Changes in thinking" in Table 3). See Appendix B for a data collection timeline.

Educator interviews. Educator interviews were designed to obtain a rich understanding of teachers' thinking about learning differences and their problem-solving processes in the classroom. As Patton (2002) articulated,

> We cannot observe feelings, thoughts, and intentions. We cannot observe behaviors that took place at some previous point in time. . . . We cannot observe how people have organized the world and the meanings they attach to what goes on in the world. We have to ask people questions about those things (p. 341).

Interviews were conducted with each SA participant at the school, as well as with seven other classroom teachers from the same school who did not participate in the program. Educators in both groups were interviewed at the middle and end of the school year using a semi-structured interview format. All interviews were recorded using a digital recording device and transcribed by an outside transcription agency. Copies of interview guides are included in Appendix C.

Table 3

Data Collection Techniques

Data collection technique	Source	Time point	Research question	Types of data collected
Teacher interviews	SA group Non-SA	Mid-year, End of year	▪ Implementation ▪ Changes in thinking	▪ Implementation of SA ▪ Problem-solving approach for addressing students' learning needs ▪ Perceived impact of the program
-Problem solving vignettes	SA group Non-SA	Pre-SA (SA only), End of year	▪ Changes in thinking	▪ Problem-solving approach for addressing students' learning needs
-Teaching concept maps	SA group Non-SA	Mid-year, End of year (reviewed)	▪ Implementation ▪ Changes in thinking	▪ Approach to addressing students' learning needs ▪ Implementation of SA
-Implementa-tion survey	SA group	End of year	▪ Implementation	▪ Implementation of SA
Principal interviews	Principal	Pre-SA, 1st semester, Mid-year, End of year	▪ Implementation	▪ School context ▪ School-wide use of SA ▪ Perceived impact of the program
Classroom observations	SA group Non-SA	Mid-year, End of year	▪ Implementation	▪ School context ▪ Implementation of SA ▪ Approach to addressing students' learning needs
Teacher Efficacy Scale	SA group Non-SA	Pre-SA (SA only), End of year	▪ Changes in thinking	▪ Teaching efficacy
Observation of Practicum sessions	SA group	4 times during year (Oct-Mar)	▪ Implementation	▪ Implementation of SA ▪ School context
Assistance Team observations	SA group	4 times during 2nd semester	▪ Implementation ▪ Changes in thinking	▪ Implementation of SA ▪ School context ▪ Group problem-solving approach
Evaluation data	SA group	End of Core Course, End of Practicum	▪ Implementation	▪ Impressions of SA program
School records	School records	End of year	▪ Implementation	▪ School context ▪ Outcomes associated with SA implementation

Interviews with SA participants were designed to provide information about how they perceived the program, the ways they implemented SA practices, and the manner in which they addressed problems with struggling learners. During the summer prior to the SA Core Course, participants were interviewed over the phone using the *Teacher Problem-Solving Vignettes*. More information on the Vignettes is included later in this section. Participants were interviewed again mid-year. At the beginning of this interview, each participant was asked to draw a concept map describing her approach to addressing the diverse learning needs of students in her classroom (more on this methodology is included later in this section). SA participants were then asked about their impressions of the program, how they have used various program components in their classrooms, and the ways the program had impacted struggling students and their class as a whole. Interviews were modified for SA participants who were not classroom teachers (i.e., speech-language therapist, Title 1 teachers); participants in this category were asked to describe the specific ways the program influenced their work and interactions with students. A portion of each interview focused on the student(s) the participant selected to "attune" during the school year. As part of the "attuning" process, participants were expected to select a student who was struggling with some aspect of learning, collect data on the student to develop a learning profile, and create a management plan with accommodations and interventions to support the student's learning. During interviews, participants were asked to describe the student's learning problems, the ways they addressed the student's learning needs, and what outcomes they had observed.

When participants were interviewed again at the end of the school year, they were asked to complete and discuss the *SA Implementation Survey* (see description later in this section). Participants gave updates on the specific students discussed during the mid-year interviews and were asked about their impressions concerning the use of SA in their school and specifically with the Assistance Team. Participants were also asked to respond again to the *Teacher Problem-Solving Vignettes*, as they had prior to the SA Core Course, and they were given the opportunity to make additions or changes to their concept maps.

Classroom teachers who had not been part of the program (non-SA participants) served as a comparison group. They were asked to describe how they worked with diverse learners in their classrooms, what influenced the ways they addressed students' learning needs, and how they worked with specific students struggling with learning. Non-SA participants were asked to complete the same concept mapping exercise as SA participants. They also responded to the problem-solving vignettes during end-of-year interviews. These data collection strategies are described in more detail below. Understanding that this group likely had some exposure to SA through their school, non-SA participants were also asked about their impressions of the SA Program and their experiences referring students to the Assistance Team.

Teacher problem-solving vignettes. The *Teacher Problem-Solving Vignettes* described three hypothetical students with learning difficulties. Participants were asked to answer a series of questions regarding how they would think about and work with that student. Participants were specifically asked what other information they would want to know about the student, what strategies they would use to work with the student, how they would know if these strategies were working, and how successful they thought they would be in helping that student if he or she were in their classes. These vignettes were designed to capture teachers' problem-solving processes when working with struggling learners. Although there are limitations to assessing problem-solving through hypothetical situations that do not account for the dynamic nature of real classrooms (Fang, 1996), this data was compared with descriptions from participant interviews of their "attuned" students.

SA participants responded to the Vignettes during phone interviews prior to the SA Core Course and at the end of the school year. However, because interviews were conducted over the phone during summer vacation, two participants were unavailable to be interviewed prior to the SA Core Course. All participants were interviewed using the Vignettes at the end of the school year, including non-SA participants. A copy of the vignettes and interview questions is included in Appendix D.

Concept maps. Using concept mapping exercises in educational research has been found to be an effective tool for examining conceptual understanding and the underlying explanations for an individual's performance or behavior (Lavigne, 2005). In a study designed to examine innovative

methods for tracing conceptual change among prospective teachers, Morine-Dershimer, et al. (1992) identified concept mapping as an effective means of assessing education students' conceptions of effective teaching, providing broad and varied information about participants' conceptions of effective teaching and being sensitive to assessing patterns of change. Lavigne and colleagues (2005) not only found that concept maps provided more information about the relationships between concepts than would likely be discussed in more structured interview formats, but they also helped to identify participants' assumptions or misconceptions. A concept mapping exercise was used in this study to assess participants' thinking about how they meet the needs of students in their classes.

During mid-year interviews, all participants were asked to draw a concept map describing their approach to teaching and meeting the diverse needs of students in their classes. This activity was intentionally unstructured, allowing each participant to express how she conceptualizes and organizes ideas about her classroom, students, and teaching strategies. Studies have suggested that allowing participants to construct their own maps (i.e., rather than completing a predefined structure) provides a more valid representation of participants' knowledge and thinking (Lavigne, 2005; Mergendoller & Sacks, 1994). After describing their maps, SA participants were asked to identify any aspects of their maps they felt were influenced by the SA Program. All participants reviewed their maps during end-of-year interviews and were given the opportunity to make any changes or adjustments necessary. SA participants were asked again to identify which aspects of the map had been influenced by their participation in the SA program.

SA Implementation Survey. The *Schools Attuned (SA) Implementation Survey* was developed by the Research, Program Evaluation, and Information department at All Kinds of Minds and used in this study to facilitate conversations about implementation during end-of-year interviews with SA participants. The survey included sixty-two items addressing four areas: SA with Individual Students, SA in the Classroom, SA within the School, and the Use of SA Tools and Processes. The first two sections, SA with Individual Students and SA in the Classroom, were developed from the *Innovation Configuration Map*, which lays out a continuum of specific, observable behaviors expected as part of the SA program (see Appendix A). The SA within the School portion of the survey was developed based on a literature review of professional development programs in educational settings.

This section was included in the survey to account for various school factors that may influence program implementation. Finally, in the section addressing the use of SA Tools and Processes, participants were asked to indicate how often they had used specific SA tools or processes in the past school year. The version of the survey used in this study was a working draft, so participants' ratings were primarily used as a starting point for discussing specific aspects of SA implementation. Each participant was asked to complete the survey prior to their end-of-year interview; the interviewer then asked participants to comment on their ratings and elaborate on how they used various aspects of the program in their classrooms. Survey items can be found in Appendix E.

Teacher self-efficacy scale. The Teacher Self-Efficacy Scale was adapted from Tschannen-Moran and Hoy's scale (2001) designed to measure self-efficacy for teaching (renamed the *Teacher Belief Questionnaire* for this study; see Appendix F). Numerous studies have linked effective teaching and a willingness to adopt new instructional practices to teachers' self-efficacy (Guskey, 1988; Spark, 1988). In other words, teachers who believe that they have the ability to impact the students in their classes tend to be more likely to experiment with new practices as part of a professional development program. The questionnaire was completed by SA participants prior to the Core Course; all participants (including the SA and non-SA groups) were asked to complete it again at the end of the school year.

Classroom observations. Conducting direct observations in classrooms has a number of advantages; namely, observations capture the context in which changes occur to provide an holistic perspective, allow researchers to be open to uncover phenomena outside of prior conceptualizations, and highlight areas of potential interest that participants may overlook or not mention during an interview (Patton, 2002). In order to develop an effective plan for conducting classroom observations, I conducted several practice observations of SA teachers in a local elementary school. These practice observations helped to reveal the difficulty involved in pinpointing specific "Schools Attuned practices" and distinguishing these practices from effective teaching, which the teacher may or may not have done prior to participating in the SA Program. Therefore, the role of classroom observations for this study functioned primarily to corroborate what teachers said in their interviews and determine the extent to which these reported practices were reflected in the classroom setting. Likewise, the

observations added depth to the study, as aspects of program implementation were explored based on the combination of interview and observation data.

Classroom observations served to document the specific ways teachers incorporated Schools Attuned practices in their classrooms, the nature of teacher and student interactions, and overall impressions of the classroom atmosphere. During observations, the researcher kept a running log of the teacher's instructional practices, what students did during lessons, teacher-student and student-student interactions, and classroom characteristics (e.g., physical set-up of the classroom, displays, materials used, number of students) using components of the Special Strategies Observation System (SSOS-R) (Meehan et al., 2004). The Classroom Environment and Resources Checklist was used to collect basic descriptive information about the class setting and people present, and the SSOS-R activity codes were utilized to describe teacher and student behaviors. (See Appendix G).

SA participants were observed in the middle and at the end of the school year. Information gathered during practice observations made it clear that conducting a series of observations with the expectation of seeing "SA practices" would likely in inconclusive and yield ambiguous results. Instead, targeted observations were planned based on the participant's explanation of her implementation. In other words, if a teacher mentioned that she primarily used SA during reading groups, then I made a point of observe the teacher during reading groups. Each SA participant was observed over at least two subject areas (reading and math for most teachers) for a minimum of two hours. Also, prior to each observation, the I examined participants' concept maps and interview transcripts to identify the instructional practices the teacher described using, making the observations more directly tied to the interviews and verifying the instructional practices participants endorsed. In order to insure that teachers felt comfortable having an outside observer in their classrooms, interview times were scheduled with teachers in advance.

Some studies have shown discrepancies between teachers' intentions and their actual classroom practices, especially when they are learning to use new practices (Brighton, 2003; Duffy & Anderson, 1984; Fang, 1996). Based on the recommendations of Pajares (1992), each classroom observation was followed by a short, informal interview with the teacher. When possible, I met with

the teacher prior to the classroom observation to discuss plans for the upcoming lesson in order to be able to make connections between the teachers' intentions and goals and her classroom practices. Each observation was then followed by another brief interaction with the teacher to clarify any questions about the lesson and give the teacher the opportunity to provide context for any decisions she made during the observation period.

After the initial set of interviews and classroom observations conducted mid-school year, I noted the usefulness of observing SA participants in the classroom setting. Not only did these observations yield useful information about teachers' implementation of SA practices, but they also provided a deeper, clearer understanding of the teachers' concept maps and other information provided during the initial interviews. Therefore, I decided it would be valuable to observe teachers in the non-SA group as well in order to gain the richest understanding possible of the participants' teaching practices. Observations of non-SA participants were added to the study design; each participant was observed at the end of the school year for at least one hour.

Schools Attuned evaluation and practicum data. Participants were asked to allow All Kinds of Minds to release their program evaluation data collected at the end of the Core Course and Practicum. This data provided more information about teachers' satisfaction with different aspects of the program, as well as how they used the program with the whole class and individual students. Copies of these forms are included in the Appendix H.

Principal interviews. The support and leadership of school administrators has been shown to be of central importance for teacher professional development programs (Clarke & Hollingsworth, 2002; Printy, 2004). The principal of the elementary school participating in this study was interviewed in June prior to attending the SA Core Course, and again in October, January, and May of the 2005-06 school year. These interviews focused on the school's specific goals, needs, and climate; the principal's expectations related to the SA Program; school-level implementation of SA; and any school-level outcomes related to the program.

Assistance team observations. The SA participants from the participating school included several members of the school's Student Assistance Team. The Assistance Team (or pre-referral team) consisted of a group of teachers and specialists who met weekly to help classroom teachers

develop strategies for students who were struggling in school. The team was also responsible for making decisions about whether to refer students to the special education program. In order to learn more about the ways in which the SA Program influenced school policies and procedures, I observed four Assistance Team meetings during the second semester of the school year. Meetings were recorded using a digital recording device and transcribed to facilitate content analysis.

School-level records. School records were collected in order to understand the general context of the school and document school-level changes related to the SA Program. This data included student referral rates, special education statistics, and school-wide accountability data. Additionally, copies of teachers' Individual Growth Plans for 2005 and 2006 were obtained in order to gain more information about how the SA Program influenced school planning, procedures, and expectations for teachers.

Issues of Data Quality and Credibility

As with any high quality research study, there must be accountability for the quality and credibility of the data collected. The following section describes how triangulation, the use of multiple interactions and observations, and reflections on personal subjectivity were used to insure the trustworthiness of the data.

Triangulation. Triangulation of data sources serves to compare and cross-check the consistency of information obtained at different times and through different means, thus enhancing the trustworthiness of one's data (Patton, 2002). Triangulation was used in this study both to control for bias and to establish the validity of its conclusions and propositions (Golafshani, 2003). As illustrated in Figure 3, each of the major research questions was explored using a variety of data collection strategies and sources. For example, to assess teacher change, I used classroom observations to verify teachers' accounts of implementation described during individual interviews. Data obtained through the problem-solving vignettes, belief questionnaires, and program evaluation surveys were used to further support and inform participants' own descriptions of change related to their participation in SA. Multiple data sources and informants were used to gather information about the school context and student school-level change as well.

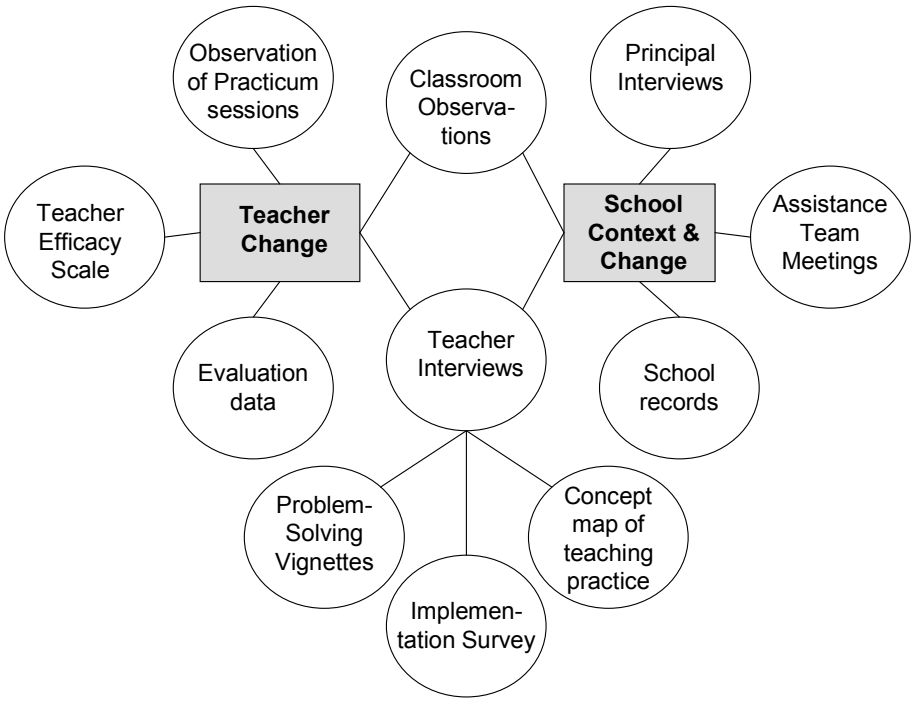


Figure 3. Triangulation of data sources

Multiple observations and interactions. As noted throughout the literature, gaining an accurate understanding of teachers' beliefs and how these beliefs impact classroom practice is complex (Brighton, 2003; Duffy & Anderson, 1984; Fang, 1996). Research participants may tell the researcher what they think she wants to hear, or they may behave differently due to the presence of an outside observer. To address these possibilities, I first made an effort to build trust and rapport by maintaining a frequent presence in the school and engaging in informal conversations with participants outside of the formal data collection settings. Likewise, multiple opportunities for interactions with participants were built into the research design in order to increase the likelihood that the data reflects participants' authentic beliefs and behavior.

Reflection on personal subjectivity. As a former employee of the All Kinds of Minds research team and a graduate student in school psychology, my personal interest in this study and subject matter could lead me to collect data that supports my own hypotheses. I addressed this potential researcher bias by continuously monitoring and exploring my own subjectivity, maintaining a

"reflective field log" and reflecting on ways that my own beliefs and perceptions shape what I observe (Glesne, 2005). I also strived to continuously challenge my findings and assumptions by deliberately searching for data that might contradict the conclusions I have drawn, thus further minimizing the effects of any personal bias.

Ethical Considerations

In order to insure the protection of all participants, the research plan was submitted to and approved by the University of North Carolina's Institutional Review Board and the district review board of the school participating in the study. All educators participating in this study signed informed consent forms, which asserted that participation is voluntary, and educators were allowed to participate in the Schools Attuned Program even if they opted out of taking part in this research study. Copies of the informed consent forms are included in Appendix I.

The protection of participants' privacy and confidentiality was considered to be of utmost importance. Each participant was assigned an identification number, which was used to identify and link all data connected to that participant, and interview and observation transcripts were edited to remove identifying information. Signed consent forms and copies of completed questionnaires and field notes were kept in a locked filing cabinet; all digital data, including transcripts, databases, and digital audio recordings, were stored on a secure network in password-protected folders.

Data Analysis Procedures

Data collected included interview transcripts, classroom observation notes, field notes from Practicum and Assistance Team meetings, quantitative and qualitative data from program evaluation surveys, and data collected from school records. A unique identification number was assigned to each participant and used to identify and track each piece of data.

Audio recordings of individual interviews were transcribed by an outside agency. Notes from Practicum, Assistance Team meetings, and classrooms were transcribed by the researcher, incorporating field notes and audio recordings. After transcriptions were completed, they were reviewed by the researcher for accuracy. As recommended by Marshall and Rossman (1999), data analysis began with a thorough reading and rereading of data transcripts. After the first set of

interviews and observations were conducted, initial coding categories were created based on emerging themes and the key research questions. The use of triangulation increased the reliability and validity of themes and conclusions, as data collected from various sources and using a variety of techniques could be analyzed simultaneously during the data analysis process. Atlas.ti, a qualitative research software program, was used to organize and code transcriptions. As the coding process continued, codes were added as new themes emerged or distinctions within a code made (i.e., initial codes were clarified and divided into two or more distinct codes). After all the initial coding was completed, interviews were reviewed to insure that the coding scheme was consistent across all interviews.

Some key codes (e.g., 'changes in thinking,' 'school context,' and 'SA use in the classroom') were intentionally broad in order to allow themes within each of these areas to emerge from the data. After the coding was completed, these key concepts were analyzed using the networking tool in Atlas.ti. The networking tool allowed all the quotations connected to a particular code or set of codes to be arranged into a visual network reflecting relationships and hierarchies within the data. For each key code (e.g., "changes in thinking"), all the quotations were first reviewed and then named in order to facilitate organization and manipulation of the network. Each quotation was linked to the original text from which it was taken, allowing for quick review and clarification when participants' meanings were not clear in the quotation. After reviewing all quotations linked to a specific code, sub-codes were created and linked to each quotation. The quotations could then be rearranged in order to visually group quotations to reflect the new conceptual organization and guide the writing process. An example of a network from Atlas.ti is included in Appendix J. All of the key codes and their subsequent themes and subcategories are included in tables in Appendixes K, L, and M.

As codes were developed and themes identified, situations arose in which participants' statements were unclear. In some instances, one statement represented more than one theme; for these cases, quotations were allowed to be coded with more than one code. In other instances, there were some statements or examples that clearly represented a particular theme, while other statements were more ambiguous. In these cases, I went back to the interviews and reviewed the context of the quotation, and then developed criterion for the theme in order to make consist

judgments regarding whether specific quotations represented the theme. Examples of cases when judgment calls were necessary are included in the discussion of study findings.

The key findings from this comprehensive qualitative analysis are discussed in the next two chapters. Chapter 4 explores changes in participants' behaviors and instructional practices, while Chapter 5 focuses specifically on participants' thinking about learning differences. The subsequent discussions are designed to explore the intricacies and complexities of the themes that emerged. Findings are presented in a manner that focuses on the themes and ideas participants expressed or demonstrated, often using the participants' own words to capture their thinking and experiences. By using direct quotations from participants, potential researcher bias or over-interpretation is reduced by allowing the reader to draw his own conclusions about the participants' meanings. Yet, in order to preserve the detail obtained through the data analysis, a series of tables are included in the appendixes outlining the specific themes identified under certain categorical codes, as well as the number of participants who endorsed each of these themes. Further descriptions or challenges encountered in the data analysis process are incorporated into the following discussions of study findings.

CHAPTER 4

FINDINGS: CHANGES IN INSTRUCTIONAL PRACTICES

Introduction to implementation

"Unless one knows that a program is operating according to design, there may be little reason to expect it to produce the desired outcomes" (Patton, 2002, p. 161). Patton's assertion captures the importance of addressing implementation in any study of professional development programs. Without an assessment of implementation fidelity, trustworthy conclusions regarding program effectiveness cannot be drawn. As King et al. conclude in their discourse on studying implementation in program evaluation, "…you simply cannot interpret a program's results without knowing the details of its implementation" (King, Morris, Fitz-Gibbon, 1987). Research also demonstrates that new programs and classroom practices may not necessarily be implemented as intended or assumed by program developers (Boardman & Woodruff, 2004; Datnow & Castellano, 2000; Mortenson & Witt, 1998; Noell, et al., 2000). Furthermore, examining how programs are implemented in school settings can provide useful information to program developers in order to make the programs more accessible and useful to educators.

The current study examined three levels of program use: implementation at the school level, with individual students, and in the classroom. Each level of implementation was analyzed based on data collected through individual interviews with participants, classroom observations, observations of the Assistance Team and Practicum sessions, and the *SA Implementation Survey*. In the tradition of qualitative analysis, this discussion includes a rich description of themes that emerged during the data analysis (Patton, 2002). Appendix K includes tables outlining the specific themes and subcategories for each level of implementation, along with the corresponding number of participants who endorsed each theme.

Implementation Survey

Before delving into the specific ways participants described using the program, a brief description of participants' ratings on the *SA Implementation Survey* provides a general sense of how participants reported using the program. Participants' descriptions of the specific ways they implemented survey components is addressed in more depth and detail in the following sections.

Participants were asked to complete the *Schools Attuned (SA) Implementation Survey* at the end of the school year prior to the final interviews for this study. The survey addressed four areas: SA with Individual Students, SA in the Classroom, SA within the School, and the Use of SA Tools and Processes. Participants' ratings from the SA with Individual Students and SA in the Classroom are discussed below. The SA within the School portion of the survey included items highlighting various school factors that may influence program implementation; these findings were incorporated into the discussion about implementation barriers and facilitators later in this chapter. The final section of the survey asked participants to indicate how often they used specific SA tools or processes during the past school year. However, because participants were required to use many of these tools as part of Practicum and on the Assistance Team, these data were unable to be interpreted and will not be reported as part of this study.

The version of the *SA Implementation Survey* used in the study was a working draft developed by the Research, Program Evaluation, and Information department at All Kinds of Minds. Because the survey was a working draft, the results should be interpreted with caution. Rather than focusing on psychometric data, the survey was used primarily as a way to summarize participants' implementation trends and prompt discussions about implementation during end-of-year interviews with SA participants. Each participant was asked to complete the survey prior to the interview; the interviewer then asked participants to comment on their ratings and elaborate on how they used various aspects of the program in their classrooms.

Participant responses were first analyzed based on how participants rated items in the two main areas of implementation: implementation with individual students and implementation with the class as a whole. The distinction between individual and whole class implementation was made by the Research, Program Evaluation, and Information team during the development of the *SA*

Implementation Survey to distinguish between teachers' use of the components of the Attuning a Student process and their implementation of SA practices with larger groups of students or their whole class. The following graph (Figure 4) illustrates each participant's mean rating for items that addressed their use of SA with individual students versus use of SA with the whole class.

Upon closer examination of the survey results, it became clear that some of the items may have been rated highly by some participants even if the participant were not using SA practices. In other words, some survey items included teaching practices consistent with the SA Program without making specific reference to using the knowledge or skills taught as part of SA, which may have led to an inflation of means (e.g., a participant may have endorsed "I seek input from the student about his or her struggles" without using specific SA practices). Mean ratings were recalculated after six items were omitted (refer to Appendix AA for omitted items). Figure 5 displays participant response trends using the recalculated means.

Examining participants' mean ratings on the *SA Implementation Survey* provided an overview of implementation trends reported by the participants in this study. First, the above figures illustrate the individual variability between participants regarding their self-reported levels of implementation. Although the mean across all participants was 2.63 (SD=0.560) for items pertaining to individual students and 2.25 (SD=0.535) for whole class items, individual participant means ranged from 1.64 to 3.50 (SA with Individual Students) and 1.58 to 3.33 (SA with Whole Class). Second, participants rated items related to implementation with individual students as more typical of their teaching practices than items pertaining to implementation with the whole class. Tables 4 and 5 provide more detail about the items endorsed as most and least typical of participants' teaching practices. A complete listing of survey items and response frequencies are included in Appendix E.

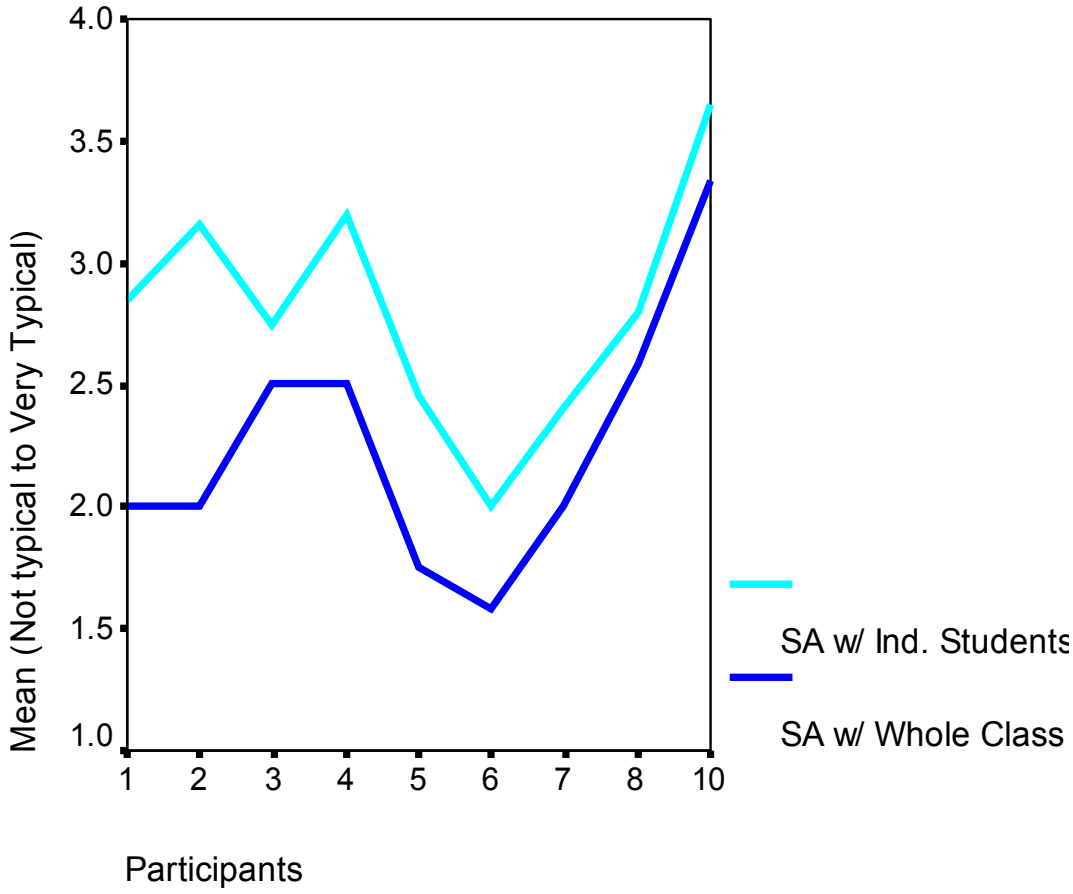


Figure 4. SA Implementation Survey findings: individual students versus whole class

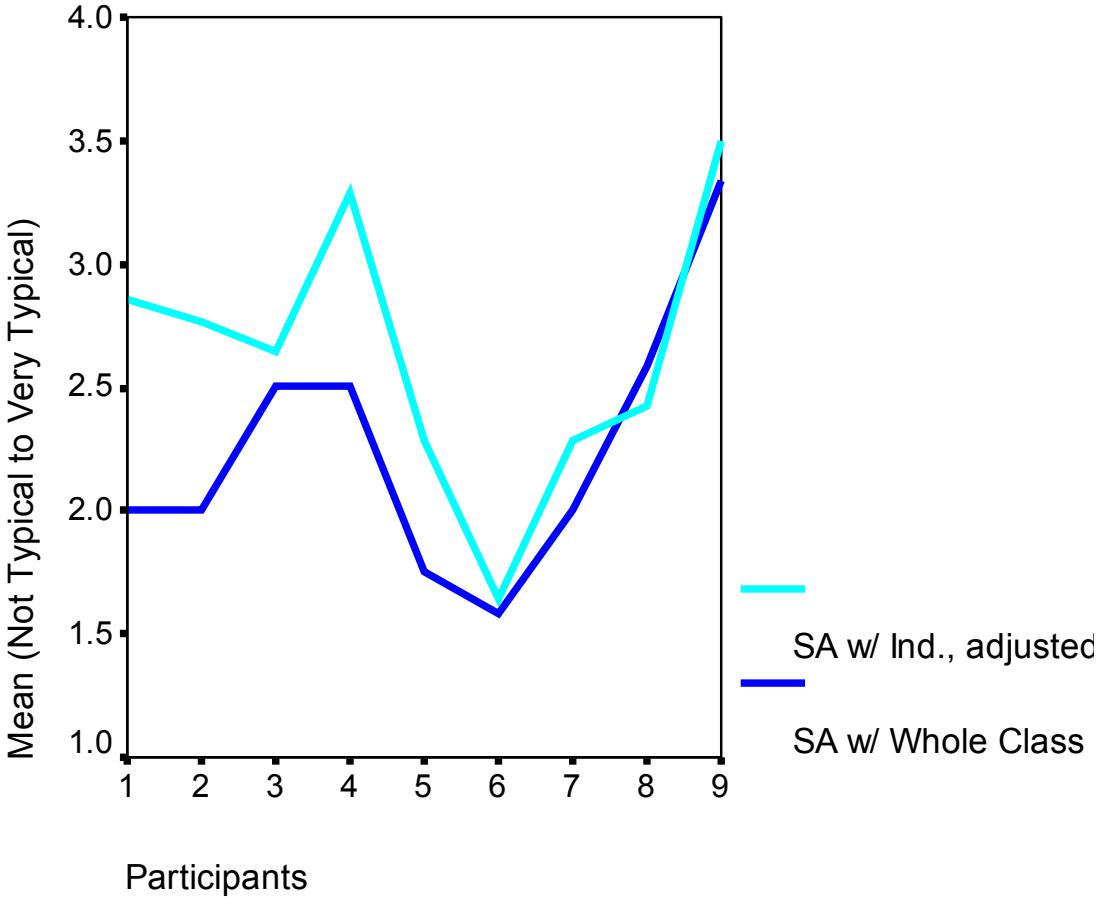


Figure 5: SA Implementation Survey findings with recalculated means

Table 4

SA Implementation Survey *Items Endorsed Most Often as Typical or Very Typical*

Survey Item	Typical	Very Typical
SA with Individual Students		
I notice the student's strengths and weaknesses in terms of specific, observable behaviors.	56%	44%
I seek input from other teachers about the student's struggles.	67%	33%
I seek input from the student about his or her struggles.	67%	33%
SA in the Classroom		
I use strategies (based on the neurodevelopmental (ND) framework) that have the potential to benefit all students.	67%	23%
I present lessons in a variety of ways based on an understanding of students' ND strengths, weaknesses, and affinities.	67%	23%
SA within the School		
The principal is committed to the success of SA at my school	56%	44%
The principal is knowledgeable about and involved with SA at my school.	56%	44%
SA fits well with the educational goals and mission of my school.	89%	11%
SA fits well with other school improvement efforts at my school.	89%	11%

Table 5

SA Implementation Survey *Items Endorsed Most Often as Somewhat or Not Typical*

Survey Item	Somewhat Typical	Not Typical
SA with Individual Students		
I use the ND framework to analyze the student's work samples.	33%	22%
I use the ND framework to communicate with colleagues about the student's learning	33%	22%
I provide parents with resources or home-based strategies based on the ND framework.	33%	33%
SA in the Classroom		
I teach freestanding lessons about how students learn using the ND framework.	33%	67%
I embed lessons about the ND framework (or learning about learning) within academic tasks.	44%	56%
I provide parents of students in my class with resources and opportunities to learn about SA concepts and strategies.	33%	56%
SA within the School		
Our school schedule allocates enough time to support use of SA.	56%	11%
I have time available to plan and reflect upon my SA practice.	56%	11%

Although this information was useful for obtaining a general sense of implementation trends at the end of participants' first year of SA use, it provided little detail about how SA actually looked in individual classrooms and how teachers worked to incorporate these practices into their teaching. The remainder of this chapter explores the ways SA participants described using SA in various aspects of their roles as educators.

School level implementation

Although the SA Program does not specifically focus on school-wide implementation, the school involved in this study incorporated the program with specific goals for how SA would be incorporated into the school's overall plan for growth. The school's mission statement stated:

> BES will provide a safe, caring environment that addresses the diverse needs of all students and promotes individual growth. Through collaboration with parents and community, high expectations and an emphasis on learning will motivate students to become productive, successful citizens. Together we will inspire life-long learners (BES, 2005).

In order to address the diverse needs of all students, the SA Program was embraced as a means of affecting struggling students who do not qualify for special education services. Specifically, SA was indicated as one intervention on the School Improvement Plan, along with an after-school program and additional services for retained students, to address the school's goal to "strive to raise overall student achievement by 2% by June 2005 and ensure all students are proficient by 2014" (BES, 2005). As a means of addressing school needs and targeting those students most in need of additional support, the key avenue of SA implementation was the school's Assistance Team. In particular, the School Improvement Plan stated, "The Assistance team will utilize Schools Attuned strategies to: (a) identify individual student's strengths and weaknesses, (b) create individualized, specific strategies to better meet their educational needs, and (c) reduce the number of students referred for psycho-educational assessment." While the SA Program's focus on meeting the needs of diverse students aligned closely with the school's overall mission, it became clear through conversations with the school principal that reducing the number of students referred for psychological evaluation was a key component to the school's incorporation of SA. When asked about this specific goal, the principal stated, "So what does that do in the long-run? It saves us a lot of money. Testing is money. When you have a psychologist, that psychologist has to be pulled away from somewhere to do all of the testing and we have cut our testing in half." When examining how this particular school incorporated SA at the school level, this goal of reducing the referral rate became important for understanding how SA was used and why it was adopted in specific ways.

Not only did school administrators address how the SA Program was related to the school's short and long-term goals, but these goals were also presented to the school staff as a part of the School Improvement Plan, exposing those teachers and staff members who did not participate in SA to the basic goals and premises of the program and allowing the SA participants to see how their involvement with the program fit into the school's larger plans. The principal explained,

> You have to make it a part of your plan. . . .If people understand why it is there in the plan then, if they are not accepting of it, then they have to be accepting of it because it is part of our Individual Growth Plan for teachers to implement strategies, and strategic planning of the school improvement plan. So it is there and that is why I didn't think we'd get a lot of bucking…they understood, "Well it is a part of our school improvement plan so let's see what happens.". . .It is a viable component of the service and the mission plan of the school.

SA participants also agreed that SA were inline with school-wide goals. One participant described how SA helped teachers think about how to get students through end-of-grade tests and prevent retention, "because the children that we're most concerned about, those are the ones that we put to this SA model." Another exclaimed, "I'd be crazy not to say that what SA is all about doesn't align with our educational goals and mission because it's all about kids and their learning, so it does align."

The principal developed a long-term plan for incorporating SA at the school level, which he articulated during an end-of-year interview. According to the principal's plan, the first cohort of teachers and specialists would participate in the SA program during the first year of implementation (i.e., the year this study was conducted). During this initial year of program use, an emphasis would be placed on implementing the program on the Student Assistance Team. The principal explained that this would be consistent with the goals set forth in the School Improvement Plan, while also allowing participants to become comfortable with the SA content and processes in a supportive group setting. During the second year of implementation, the first cohort of participants would shift their focus to using SA in the classroom while a second cohort of teachers participated in the SA Program. Teachers in the second cohort would be rotated onto the Student Assistance Team, allowing them to work with other teachers who were familiar with or also learning the SA content. During the third year of implementation, the second cohort would focus on implementing SA in the classroom while a new cohort participated in the SA Program and implemented SA on the Assistance Team. The principal stated that he intended for this process to continue until all teachers in the school have participated in the program.

The Assistance Team clearly played a key role in the long-term school implementation plan for SA. The school's adoption of SA on the Assistance Team holds particular interest because the

SA Program did not explicitly promote or teach participants how to use its processes or techniques on an assistance team. The school staff in the first cohort of SA participants, under the leadership of the school principal, adapted processes they learned during the SA Core Course to fit the role and function of the Assistance Team at their school. The Assistance Team was viewed by participants and school leadership as a natural setting for teachers to increase their proficiency through group interactions and the regular use of SA practices. The specific benefits and challenges of using the Assistance Team for incorporating SA practices within the school are discussed later in this chapter. First, the procedures of the school's Assistance Team and how SA was incorporated into the team's function are outlined below.

The Student Assistance Team Process

As mentioned previously, the Assistance Team (or pre-referral team) consisted of educators who worked to develop strategies for students who were struggling in school and made decisions about whether to refer students to the special education program. Team members included the speech-language pathologist, a special education teacher, a Title 1 teacher, and one classroom teacher from each grade level. Classroom teachers served on the team on a rotational basis, typically for two to three years. After attending the SA Core Course in the summer of 2005, SA participants developed a plan for adopting SA materials and processes into the Assistance Team protocol to be implemented in October 2005. The following statement was included in a memo to all school staff at the beginning of the 2005-06 school year regarding the use of SA on the Assistance Team:

> The assistance team has discussed procedural changes that we feel will have a greater impact in meeting the needs of our at-risk students. These conversations last fall culminated with several of us attending *Schools Attuned* training this summer. The goal for our team is to make sound and reasonable judgments as to the students we refer for testing so that the number of students that do not qualify for exceptional children services will be reduced by 50%. We believe the Schools Attuned model will assist us in this effort.

Figure 6 outlines the specific steps of the new Assistance Team process, incorporating numerous forms and procedures used in the SA Program.

Figure 6. The Assistance Team process after incorporating Schools Attuned

1) Classroom teacher responsibilities:
   Complete County Referral Form and *SA Teacher View* (rating form),
   Document interventions already tried; Collect student work samples;
   Send home *SA Parent View* (rating form)

2) Assistance Team Representative responsibilities:
   Collect forms from classroom teacher (see above);
   Observe the student (approximately 30 minutes);
   Complete the *SA Student View* (rating form) with the student;
   Complete keys for *SA Views* (parent, teacher, student forms);
   Complete the SA Work Sample Analysis

3) At the Assistance Team Meeting:
   Complete SA Consolidation form and SA Profile Summary form;
   Develop a Management Plan with specific interventions and accommodations for the student

4) Assistance Team Representative meets with the classroom teacher to go over the student profile and management plan. Strategies are implemented for 4-6 weeks.

5) The Assistance Team reconvenes with the classroom teacher after 4-6 weeks of using strategies.
   - If student is improving, continue and/or modify interventions and schedule a follow-up meeting, if necessary.
   - If students' problems continue, determine whether interventions have been implemented consistently. If so, decide if other interventions are needed or refer student for psychological testing.

The process outlined in Figure 6 provides an overview of how the Assistance Team was intended to function using SA processes. For the most part, the procedures were followed as outlined above, but as with any innovation, it is important to examine not only what was intended to happen, but how that plan played out in practice. The following section describes what Assistance Team meetings looked like from an outside observer's point of view.

Observations of Assistance Team meetings. I observed four Assistance Team meetings through the course of this study. During each observation, team discussions were recorded using a digital audio recording device, and a running record was kept of the conversation and participant behavior. Participants on the team were familiar with me as the researcher, as I had also observed during their Practicum sessions, interviewed individual participants, and observed in many of their classrooms over the course of the semester. The team typically met for 1.5 to 2 hours once a week.

Meetings included a combination of initial meetings on students (i.e., a review of initial paperwork and development of a management plan for a student), and follow-up meetings with classroom teachers after recommended strategies had been implemented for a certain period of time. The team typically discussed three or four students during one meeting.

Referrals to the Assistance Team were typically initiated by classroom teachers. When a teacher observed a student experiencing difficulty in her class, she first discussed the student with colleagues at a weekly grade level meeting. The teachers collaborated to develop strategies for the teacher to implement with the student for at least two weeks. After two weeks, the Assistance Team representative (ATR) responsible for that grade level conferred with the referring teacher to determine whether the strategies were successful. If no improvements were observed, the ATR would initiate the Assistance Team process and begin collecting the paperwork indicated in steps one and two in Figure 6. Adding SA practices to the Assistance Team model impacted this phase of the process by changing the types of information collected prior to the initial team meeting. By using the *SA Views*, specific information about various areas of functioning was collected from teachers, parents, and students prior to the initial meeting, whereas the previous model only included information from the teacher. In addition to collecting the paperwork, the ATR conducted a classroom observation of the student and collected work samples. When possible, the ATR completed the Work Sample Analysis form and the Keys to the *SA Views* to summarize responses from the rating forms. She also completed the SA Consolidation Form, which consolidates all the information collected from the rating forms, observation, and work samples. When the ATR was unable to complete these steps prior to the initial meeting, all the team members worked together to consolidate the information gathered.

At the initial Assistance Team meeting, the team reviewed all the data collected to identify the student's specific strengths and weaknesses. Strengths and weaknesses were identified using both SA neurodevelopmental terms (e.g., sequencing, processing controls, short term memory, social pragmatics) and academic areas (e.g., phonics, math concepts, reading comprehension). During this problem identification process, team members frequently asked clarifying questions or discussed apparent inconsistencies in the data in order to hone in on specific areas of concern. The team then worked together to develop a management plan that included accommodations and interventions to

address both the strengths and weaknesses of the student. After identifying specific strengths and weaknesses, the team developed at least two strategies for each area of concern using the SA Management Plan form. One or two team members typically had the SA Management Resources binder open to look for strategies. A team member frequently read a strategy and other team members would add to it or comment on whether that strategy would be appropriate for the student. After focusing on strategies to address the student's weak areas, the team identified strategies to allow the student to strengthen her strengths. The excerpt below, taken from field observation notes from February 2006, illustrates how participants worked together to develop a student's management plan.

P1: OK, processing controls - let's think of accommodations for that.

P2: (looking in the SA Management Resources Binder) We're going under math, right, under processing controls.

P1: If you think about even just last night [at Practicum], even though it was reading, that's the same thing. It's a bypass strategy if the teacher highlights key words - because she has a good vocabulary. . .maybe we could work that in somehow. . . .

P2: Now in the attention area, to help her connect concepts to prior experience, this just gives examples of ways you'd do that. (She gives a few examples and the team discusses.)

P1: One thing I think would help is the "Read it, Draw it, Solve it. . . ."

P1: Done! Oh, strategies to strengthen strengths. . . .

The team seems to be able to come up with these ideas on their own without the MRB.

P1: Social pragmatics. . .since language is a strength also, why don't we have her talk to other kids about her reading. (writing strategy) . . .will retell stories with a buddy. Receptive language is a strength, so that will help strengthen her strength.

P2: Would it help to be the one to help the others?

When the management plan was completed, the ATR discussed the plan with the classroom teacher. The classroom teacher was then responsible for sharing details of the plan with the parent and the student. After implementing the strategies outlined on the student's management plan for four to six weeks, the team met with the classroom teacher to review the student's progress. The

team reviewed each strategy recommended, and the teacher reported whether she observed no change, erratic progress, improvement, or success. Teachers were also instructed to report on whether the student could use the strategy independently and if progress was observed in multiple areas (e.g., spelling improved on tests and in writing assignments). After the teacher reported on the effectiveness of the strategies, the team discussed whether more strategies were needed or if a referral for a psychological evaluation was warranted. If the Assistance Team process was continued, the team would schedule another meeting to discuss the student's progress with the teacher. During subsequent meetings, the same process was followed: the teacher reviewed the effectiveness of each strategy and the team discussed whether to end to the Assistance Team process, introduce new accommodations or interventions, or refer for psychological evaluation. Overall, the Assistance Team appeared to function according to the plan set forth at the beginning of the school year. The only time the team varied from the plan described in Figure 6 was when the ATR was unable to complete the paperwork prior to the meeting. However, in these instances, papers were completed at the beginning of the meeting, and several participants commented on how it was helpful to review this process together as a group. Another interesting observation made during Assistance Team observations was that some students were selected to go through this new SA process, while the team reverted to the former model with other students. The process of "doing SA" is described in the following section.

"Doing Schools Attuned" on the Assistance Team. During Assistance Team meetings, team members were observed to discuss whether they were "doing Schools Attuned" with particular students. For some students, they reverted to the previous Assistance Team model, using all the county forms rather than incorporating the new SA processes. When asked how they decided whether a student was "Schools Attuned" or not, there did not appear to be a hard-fast rule that determined which referral model would be used for a particular student; the team seemed to make this decision on an individual basis. A few team members described how some students were put on a "fast track" using the former Assistance Team model when it was highly likely that the student would qualify for special education services, while the SA model was used when more information about the students' struggles was warranted. The principal stated,

> What the Schools Attuned model does – it gives us a lot more information in the Assistance Team. And keep in mind there are some kids that we know are going to go to testing, so we don't do Schools Attuned model on those kids. But those iffy kids that we are not really sure what is going on, those are the kids we really hone in on the Schools Attuned model.

During Assistance Team observations, students selected to go through the former process included a student with a serious medical condition and a kindergartener with behavior problems.

Outcomes attributed to changes in the Assistance Team process. As previously stated, one of the school's primary goals was to decrease the number of students referred for special education who were found ineligible for services. In the 2004-05 school year, only 27% of students referred for a psychological evaluation were found eligible based on the categories of disability set forth by the state's department of education. The placement rate increased to 69% for the 2005-06 school year after integrating SA into the Assistance Team process. Members of the Assistance Team attributed this shift to their new procedures based on the SA model. Several participants indicated that, prior to SA, the team would implement strategies for four weeks, but "if the interventions didn't work then you are at a loss trying to figure out what is going on with the kids, and the only other avenue that you would have for that is to recommend the child for testing from our psychologist." However, at the end of the school year, one participant reflected: "We have made a drastic difference in our placement rate because it is through the attuning process that we really identify those kids who need to be tested and those who don't." Another participant noted, "I think we are more careful about the kids that we test based on the Schools Attuned process." Other participants expressed "we were able to better decisions about children," and "hopefully we've had better interventions."

The principal also commented on the benefits of the new Assistance Team process, which used ATRs to ensure implementation of the recommended strategies. The principal stated,

> Now you've got more accountability to it. Now you have a management plan that you share with your parents. You have a management plan that is being followed-up by an Assistance Team whereas once interventions were done there was no follow-up to it; it was either test or not test and if you didn't test then the kid went back into another intervention plan.

All study participants were asked for their opinions regarding changes to the Assistance Team process. Overall, participants had positive comments about the new process. However, one SA participant on the Assistance Team expressed some concerns about no longer having parents attend the Assistance Team meetings. She commented on the fact that the team did not have the opportunity to obtain the parents' perspective aside from the paperwork completed ahead of time and reports from teacher-parent communication, and the team was not able to discuss strategies that could be used at home directly with the parent. When asked about parents' attendance at meetings, the principal noted,

> Before, we had parents come in and sometimes, you know, they were able to have some conversation about it, but I think [the Views] help to direct more questions that really relate to school, not just opinions-and when I say opinions, like the parent might come in and go, "Oh, they're just lazy. They just don't do their homework." But when they have those forms, there are specific questions that are not opinionated. I think are based more on facts, you know, on what your child does, what they do at home.

Another change in Assistance Team format was that classroom teachers no longer attended initial Assistance Team meetings on students. During observations of the Assistance Team meetings, questions sometimes arose that could have been answered by the classroom teacher (e.g., clarification of a student's specific difficulties). During one of these instances, one of the team members called the teacher on the telephone to ask for clarification. However, some classroom teachers who were interviewed commented on this change as a positive aspect of the new model. The principal also found it a better use of teachers' time to be in the classroom instead of sitting through the management planning process:

> I think my teachers enjoyed not having to come to the first meetings with the attuned kids because that takes them out of the classroom. It is nice to be able to send the people that have been through the Schools Attuned training to collect all of that paperwork. And when the teacher does come in you've already got the strategies in place, you've already analyzed the work samples, so it is more-and I think one of the positives that I would think everybody would say is it is a more efficient model than what we had.

SA participants on the Assistance Team indicated that they benefited from the discussions during team meetings about the program and implementation issues that arose as they used the Attuning a Student process and SA resources. While team members commented on the extra time it took to adopt the new model into their team processes, many participants indicated that the new model seemed to work, which made the effort worthwhile.

Non-SA Participants' Views of Assistance Team

Non-SA participants were also asked their opinions of the pros and cons of incorporating SA into the Assistance Team process. Four of the seven participants in the comparison group had referred a student to the Assistance Team since they adopted the new model. All four participants made positive statements about the new process. One teacher stated, "They put a lot more time and thought into it. . . . they really think, 'Well, what are their strengths? What are their weaknesses? . . . And they learned a lot of new strategies." The other participants commented on the benefit of being able to talk with team members about students' problems. They also described how completing the *SA Teacher View* as part of the Assistance Team referral process helped them consider different aspects of students' learning. For example, one participant stated,

> The teacher questionnaire . . . it got us to look at so many different aspects in a child that you don't think about when you are trying to look at a kid and going, "Well what are they having difficulties in?". . . Even as I was doing that I was brainstorming, "Did that have something to do with it?" . . . "Oh yeah, that could certainly have something to do with disorganization."

When discussing completing the *Views* with the referral paperwork, another participant stated, "That kind of opens up other venues that you wouldn't normally think of and other strategies as well to see. . . . I didn't mind doing that, and I think it's very beneficial to the child."

Participants who had referred students to the Assistance Team were asked if their experiences with the team impacted any other aspects of their teaching. All four participants responded that they were able to use the strategies with other students in their classes as well. One participant responded,

"I did have a kid that had a lot of attention issues and I had gotten a lot of feedback on him and what to do with him that I will use with tons of kids in the future because they are good strategies." Others

indicated that they ended up teaching the strategies to their whole class when many of the students were struggling with a particular concept. One participant also discussed sharing strategies from the team with the student's parents.

When asked what negative aspects they had observed regarding the new Assistance Team process, one participant commented on the lengthiness of the paperwork and noted that she was not able to answer all the questions on the *Teacher View*. A couple of participants indicated that the process took too long for students who were eventually referred for psychological testing, thus delaying services for these students. Finally, one participant indicated that the new model seemed to put a great deal of additional work on Assistance Team members.

Other Aspects of School-wide Implementation

While the integration of SA into the Assistance Team process was clearly the most apparent impact of SA on school-wide processes, the program was integrated in other ways: namely, as part of teachers' Individual Growth Plans and a new character education program. By incorporating SA into school-level processes, the entire school staff was aware of the program and its general influence on their school.

Teachers' Individual Growth Plans. School-level ambitions for the SA Program and the school's overall goals were closely aligned, focusing on continued growth and improvement for students and teachers. In order to emphasize SA's central role in the school's growth plan, SA-related goals were incorporated into teachers' Individual Growth Plans and yearly evaluations for SA participants. The manner in which SA-related goals were incorporated into teachers' Individual Growth Plans varied between participants. On each growth plan, the teacher selected a goal from a matrix of options, and then outlined the activities required to meet that goal, evidence of completion of those activities, accomplishments associated with the goal, and a short narrative regarding the impact on performance. SA was listed as an activity related to achieving specific goals. The goals selected varied by participant, but examples that included SA as a key activity included: "Participates in the development of a broad vision and goals for the school," "I will use a variety of methods to teach students," "Participates in collaborative work groups to set challenging goals for the school and supports the learning of others," and "Understands how students differ in their approaches to learning

and creates instructional opportunities to diverse learners." In the Accomplishments and Impact on Performance sections of the growth plans, teachers were able to describe how they met their goals and how their teaching had been impacted as a result. Not all teachers commented specifically on their involvement in SA. However, comments related to SA included:

- I successfully completed Schools Attuned training and was able to apply techniques and strategies in my work with our school's assistance team as well as in my own class.
- Participating in the School's Attuned training this year has allowed me to understand different aspects of misbehavior and learning difficulties that students at our school may experience.
- I have completed a portfolio of "attuning" two students…I have been able to use several strategies from the Schools Attuned training to aid students in my room who demonstrate difficulties in learning.
- Serving on the Assistance Team and completing the Schools Attuned training has increased my knowledge of the curriculum for all grade levels and expanded my role in helping students and teachers with strategies to help meet goals and benchmarks.

The principal discussed the importance of incorporating these goals into teachers' Individual Growth Plans as a means of emphasizing the connections between the SA Program and the school's general goals and objectives. Not only was this viewed as a motivating factor for teachers to implement SA, but it was also a way to recognize the extensive time and effort teachers put into their training and implementation of these new practices.

Character education program. During the SA Core Course, one group activity involved participants working with other participants from their home school to discuss a school-wide plan for addressing social cognition. During their discussion, the participants in this study developed a new character program for their school. The principal described,

> . . . you had to come up with a plan for social cognition within your school. That is, how to get along with others, and because they talked about a lot of images and issues within

> classrooms with behaviors can impede learning as well. And that is why we developed the plan that we did.

The participants continued to revise the plan during the early part of the school year and implemented it school-wide. The principal commented,

> I think that has been a really good program thus far. And we look at having a more inviting environment for kids that move in and have a more inviting environment for kids that are not as socially adjusted for school as they need to be.

Although the SA participants took a leadership role in developing and initiating this plan, all of the school staff became involved in its implementation.

Other School Staff

Given the emphasis on school-wide implementation of SA, the reaction of school staff who had not participated in the program was of interest. When asked in October 2005 how other teachers had responded to the program, the principal reported,

> Everything we do here we run through the School Improvement Team - what a lot of people call the leadership team. And it was approved last year for us to do [SA] - we recognized a need for it. So based on that, and only two people turnover last year, I would argue that, yeah, everybody's on board with it. And everybody's aware of what we're doing. Everybody knows that it's part of the three-year plan to get all classroom staff trained.

The principal saw it as part of his role "to make sure that the other people who didn't go through Schools Attuned program understand why we do what we do and understand why we've asked them to do more work than they've ever done with intervention strategies."

In addition to classroom teachers understanding why some processes and procedures were changing due to SA, the Assistance Team itself included two team members who did not take part in the program. During Assistance Team meetings, these team members were observed to appear somewhat hesitant about contributing to the management planning and even commented on being "lost" at times. One SA participant described,

> I think they felt a little left out, but as the year went on, they were catching on. At the beginning though it was kind of hard, they were like, "Oh, I don't know what y'all are talking

about!" But then they would circle them up a notebook and look up things, and I think as the year went on they jumped on, and they were able to go back to their grade level and talk about different things and why we were doing things differently. . . the people who did not go through the Schools Attuned were also new to the A-Team this year-they had a double whammy.

Conclusions on School-wide Implementation

The emphasis on how SA aligned with the broader school goals and growth plan was a recurring theme when examining school-level use of SA. As a group, SA participants in this study were observed to be innovative in adapting the information they obtained through the program to fit their particular school's needs. The principal explained,

> We haven't changed our school to be a Schools Attuned model. . . . We've used Schools Attuned constructs and used Schools Attuned strategies to fit in what we are doing here. We have a good infrastructure. I am very pleased in the accomplishments that my people have made here. We are just looking for that special strategy or that special thing that can get us over the hump. This may be it; it may not be it. But to date I see some positives with it. . . . I just feel it is offering us a different vision of how kids learn. It is offering us different ways of looking at things. To me that is, if it does that then it is a positive.

Participants also had hopes that school-wide implementation of SA would address teachers' concerns about struggling students in need of additional support in the classroom. One participant stated,

> Well, I'm hoping that when we implement it school-wide, that it will help those children that I'm afraid are going to fall, they are not easy children, they are not getting those extra services and I hope that this will be able to help them achieve where they need to be. I don't know that it'll make it 100% like it's supposed to be, but I think it's a good plan to try to get them there.

However, the principal stated, "It is an evolving process. Like I told you before, change is not like magic, it doesn't happen overnight. And this is a change, very much a change in what we have done

in the past." Time and considerable effort are required for educational change to occur at the school level, but also for individuals attempting to incorporate new ideas into their teaching practice, as is discussed in the following sections on participants' implementation.

Implementation of Schools Attuned with Individual Students

As evidenced through the *Schools Attuned (SA) Implementation Survey*, participants reported using SA practices in a variety of ways when working with individual students who struggle with an aspect of learning. Comprehensive analysis of data related to participants' use of SA collected during individual interviews, classroom observations, and Practicum sessions resulted in the following key themes: (a) using strategies with students, (b) talking with student about learning, (c) talking with parents about student learning, (d) incorporating students' strengths in learning, (e) gathering information to analyze student learning. Specific information about the number of participants who endorsed each of these themes is included in Appendix K.

Using Strategies with Students

Interview data indicated that participants most frequently referred to the strategies they used with students when discussing implementation with individual students. In general, participants described using both accommodations (i.e., bypassing a weak area) and interventions (i.e., strengthening an area of learning). Strategies were discussed as part of a broader Management Plan for "attuned" students, as well as being used in isolation with other students struggling in a particular area. Several participants commented that they already used many of the strategies listed in the Management Resources Binder. These comments emphasized that a discussion of participants' use of specific strategies is complicated by the fact that the strategies endorsed by the SA Program are not exclusively "Schools Attuned" in nature. In fact, the SA Management Resources Binder is a compilation of research-based strategies collected from a variety of sources, making it the manner in which these strategies are organized and applied what is unique to the SA Program, rather than the strategies themselves. In fact, when describing their strategy use, participants discussed more than the particular strategies they used with students: They elaborated on how SA shaped their approach to using strategies to meet students' individual needs.

Three sub-themes emerged from participants' descriptions of strategy use with students: Participants indicated that SA (a) provided them with new ideas for strategies, (b) influenced the ways they selected strategies for students, and (c) encouraged them to teach students to use strategies independently. Although all classroom teachers who participated in the study indicated that they used accommodations and interventions from the SA Program, several participants discussed specifically how SA provided them with new ideas for strategies and increased the diversity of strategies they used in their classrooms. One participant described, "It gives you more ideas, more strategies to help children with difficulties. . . . especially that book that tells you that you can do this and this and this, it gives you better ideas instead of you having to come up with them on your own." In addition to using strategies with regular education students, the speech-language therapist described, "In my therapy when I am working with, especially children that have been identified with language expressive and language delays, I find that I am totally using more strategies than maybe I would have used in the past."

Beyond simply using new strategies, several participants described how the accommodations and interventions they used were more targeted towards students' specific needs after participating in SA. One teacher stated, "The strategies are more-they're geared more towards that specific need, and they are much more effective." This teacher further described how she identified students' weaknesses in terms of the neurodevelopmental constructs presented in SA in order to select appropriate strategies to use with the student: "I look at the children with the weaknesses that I see and I try to use the construct. I try to figure out which construct to use and then use some of the strategies to help them with that." In other words, SA not only provided her with new techniques to try, but it influenced how she applied these techniques by helping her first identify the problem in more specific terms.

In addition to helping participants select strategies, one participant reported how she followed through with strategies differently due to SA; namely, she began to teach students to use strategies independently and take responsibility for their own learning. For example, a first grade teacher discussed how she worked with her students to help them use the strategies independently, describing, "This is where I'm teaching her to self-monitor - if she can adapt, make adaptations within

herself - [for example,] she may start with all the ones she knows." A similar emphasis on working towards independent strategy use for students was observed during discussions on the Assistance Team. However, this trend was not specifically attributed to the SA Program during team meetings.

Talking With Students about Learning

Several participants also described how SA impacted the ways they talked to individual students about their learning strengths and weaknesses. One teacher indicated SA prompted her to seek more student input when identifying strengths and weaknesses. She described,

> Whereas before I always felt like that was my job to figure that out, it just so makes sense to just ask them. Sometimes they really do tell you a lot. I mean, they tell you about everything else, why wouldn't they tell you that?

A first grade teacher stated,

> At least now I do try to have those conversations with them more to try and figure out what they think their weaknesses might be, or what I could do or what we could do in the classroom to make it better - get their input on that. I think I think more about that than I ever did before, I realize the importance of that.

In addition to obtaining students' input, one participant described,

> I think I help them try to figure out why it is that they are having problems with things that they do. I don't think I really thought about that as much before. I mean, I never really thought about helping him understand verbally, you know, in conversation, why those things keep happening. I just guess I thought before I needed to figure it out myself.

Although participants referenced talking to students about learning as part of the formal Attuning a Student process (i.e., "demystification"), many participants described these conversations as occurring in a more informal way. One participant referred to this as doing "bits and pieces of a demystification," indicating that she incorporated elements of the demystification process that she learned in SA, but carried these out in less structured ways.

Talking to Parents

In addition to talking to individual students about their learning, a few participants mentioned discussing a student's learning with parents. When talking with parents, one participant described how SA "helped me explain some of the things that are her strengths." Another teacher mentioned that she used the SA terminology with a few parents who were "very involved" and "would be familiar with what we're speaking about." However, this teacher did not feel comfortable using the SA terminology with the majority of the parents at their school. Overall, most participants did not report using SA with parents, aside from collecting *SA Views* on some students. A few participants indicated that SA may have a greater influence on their interactions with parents when more teachers in the school are trained and using the program, making the processes and terminology more commonplace for parents.

Incorporating Students' Strengths

A key tenet of the SA Program has been the emphasis on strengthening students' strengths. Several participants mentioned how SA influenced how they addressed individual students' strengths. Specifically, participants described how they selected strategies to address a student's strengths and weaknesses, and how "we think about it more…using those strengths to shore up the child's weaknesses." Another participant stated,

> One thing for Schools Attuned is – I have always noticed the students' strengths, but I may not have paid as much attention to it as I would now. I try to help them through the weakness. I mean, I have before, in the past, used it to keep them involved or to keep them interested in school when they seem to not be that way, but more so now.

Several participants made similar references to how they have always considered and incorporated students' strengths, but that SA took their understanding of the role strengths could play in learning to a new level.

Gathering Information about Students

Finally, several participants described how SA provided a framework for gathering information about students who were struggling in the classroom in order to analyze their learning strengths and weaknesses. One method for gathering information mentioned frequently was the *SA*

Views (rating forms completed by teachers, parents, and students). When describing the *Views,* one teacher asserted, "It really does help you break down how you can help a kid." Although all participants collected the *Views* during Practicum as part of their Attuning a Student assignment, several participants discussed using the *SA Views* to gather information about other students' learning as well. Interestingly, one participant mentioned, "I have never printed out a *Student View* for my kids, but I know what the questions are. So I will ask them questions that will help me determine." Other participants indicated that the program helped them examine student learning, in general, even if they did not go through the formal Attuning a Student process. For example, one participant described,

> We learn about all of those different neuro areas, which you would not know about a child unless you attended the class on it. So it is very valuable to be able to analyze a child and what strengths and weaknesses that they might have and where they are coming from and how to use the strengths and improve the areas that they're weak.

Another participant articulated how

> . . . just sitting down and going through the attuning and looking at all of that data forces you to begin looking at things. . .in some depth. It forces you to look at so many components that are hidden sometimes when you are dealing with the surface and the obvious.

Overall, the emphasis on collecting data to reflect various areas of student functioning seemed to influence teachers' problem-solving process, helping them analyze and think about students' individual strengths and weaknesses. SA's impact on participants' thinking processes and problem-solving is explored in more depth in Chapter 5.

Summary of Implementation with Individual Students

Findings from the *SA Implementation Survey,* participant interviews, classroom observations, and participants' conversations during Practicum sessions and Assistance Team meetings were triangulated in order to verify the consistency of participants' accounts of how they used SA when working with individual students in their classes. In general, findings were consistent across data collection techniques, although extensive use of SA practices with individual students was difficult to assess from classroom observations. Therefore, consistency of participant reports across other data

collection techniques was particularly important in the analysis of participants' use of the program with specific students who struggled with learning. *Participants'* descriptions of their approaches to working with struggling students indicated that SA aided their data collection in order to identify students' strengths and weaknesses and provided them with interventions and accommodations that could be used in the classroom to address the students' specific needs. Likewise, SA influenced the ways participants talked to students and parents, although these conversations may not have occurred in the manner specifically taught in the SA program (i.e., the full "demystification" process). Participants reported that they typically did not use SA vocabulary with parents and students, although the basis and substance of the conversations appeared to be consistent with the SA model. Overall, participants were positive in their descriptions of using SA with individual students and indicated that they would continue to use SA in these ways.

Implementation of Schools Attuned in the Classroom

Data analysis also pointed to several ways participants applied SA practices with all the students in their classrooms. The five themes that emerged with regard to participants' use of SA with large groups of students or the entire class included: (a) use of class-wide strategies, (b) incorporation of strengths and affinities into class assignments or activities, (c) differentiation of instruction, (d) use of strategic grouping strategies, and (e) teaching students about learning.

Use of Class-Wide Strategies

Participants not only described supporting individual student learning by using accommodations and interventions, as discussed earlier, but they also mentioned several ways strategies were used with the whole class. Seven of the eight teachers in the SA group discussed how using strategies with the whole class was beneficial to many students, not only the students they targeted as having specific learning weaknesses. One teacher stated, "I use them for everybody. I don't just use it for a child that's having difficulty because those strategies are just so good for everybody." Some teachers described how they started off by selecting a strategy to target the needs of one student, but "they all pick up on it, and I think it's helped all of them." A couple of teachers indicated that they selected strategies to target class-wide weaknesses: "I love that part of the

notebook where I can go in and identify weaknesses of the group as a whole and go in and find strategies that I can use." Another participant explained how she saw class-wide strategies as benefiting all students, even when the area addressed was not a weakness for some students:

> I may have one child that's having a weakness in one area, but I can use that same strategy with the whole class and it straightens things a lot. It helps all of them. Even if it's a strength for a child, it strengthens their strengths, so I think it's something that you can use with every student, not just the one that has the weakness in that area.

Participants who reported using whole class strategies described introducing these strategies in a variety of ways: one teacher indicated that she presented the strategy like a game, while others incorporated them directly into their lesson plans or class activities. Overall, participants made positive statements about being able to apply SA practices to many students in their classes, making it a worthwhile endeavor and investment of their time. During a Practicum session, one participant stated, "The good thing about the strategies with Schools Attuned is that it's not something you only do with just one child." In general, participants appeared to be satisfied with the practicality and effectiveness of using strategies from SA in their classrooms.

Strengths and Affinities

Similar to their statements regarding implementation with individual students, participants discussed how SA impacted the ways they incorporated students' strengths and affinities at a class-wide level. A few participants described how they realized the importance of strengthening strengths as a result of participating in SA. Before taking part in SA, their focus had reportedly been on "attacking the issues, and we really weren't identifying the strengths." Similarly, another participant described how her perspective changed regarding the usefulness of incorporating students' affinities into the learning process, saying,

> Even though I am interested in my kids and I make a tremendous effort to get to know them personally, I never knew, truly, until I went through the training last summer, the impact of using affinities in their learning. So that really-I think I have made a change in the way I look at affinities in children and how they can be used to strengthen.

One teacher described how she assessed her students at the beginning of the year to identify their affinities: “We do surveys and all that sort of thing at the beginning of the year just to really know your kids and know what they like to do and know what their strengths are and praise that and build on those.”

In addition to increasing their awareness of strengths and affinities, participants described a few different ways that they incorporated students’ strengths and affinities into their teaching. One teacher described a project she assigned to her class with various options for how they could present what they learned: “We give them options now a little bit more on how they are going to present. So, you know, honing in on what their affinities are and what they want to do.” Another teacher described how SA impacted the way she used students’ affinities when planning learning centers in the classroom. Others discussed making use of students’ affinities on writing assignments. One participant stated,

> I think I look more at their affinities than I used to. . .when I’m thinking about writing things, I guess I do sort of ask them-they come up with ideas for their writing and I use one of those to develop a prompt.

A Title 1 teacher reported,

> I think that I implement strategies that leverage students’ affinities. I try to find out what their interests are and, you know, especially with our journal writing. I specifically try not to limit what they need to write about, because I want them to build confidence in their ability to write.

In general, participants seemed excited to share about the ways they had found to incorporate students’ strengths and affinities into their lessons, particularly with regard to targeting students’ affinities and giving them more options to pursue areas of interest. Most participants seemed to find that targeting student affinities was both beneficial to students and relatively easy to incorporate into their teaching.

Differentiation of Instruction

When asked how they implemented SA in their classrooms, a few teachers described ways they differentiated instruction in new ways as a result of the program. Identifying statements that reflected differentiation of instruction in the coding process was difficult, as this term is used

frequently in education without a clear definition. For the purposes of this study, it was decided that differentiation would encompass those examples that reflected the teacher's use of individualized instructional techniques for the purpose of meeting students' specific learning needs. For example, statements that discussed presenting information using different modalities (e.g., visual, hands-on) but did not refer to using these techniques to address specific students' learning needs were not coded as "differentiation of instruction." In contrast, a second-year teacher described how, prior to SA, she used center-based learning frequently in her classroom, but SA helped her understand that students may have different needs: "some kids are independent enough to go and do it and some you sort of have to monitor a little bit more." This example was coded as "differentiation" because the teacher adjusted her classroom learning environment so that students would receive different types of instruction based on their specific needs. Another teacher made a more general statement about differentiation of instruction as she reflected on her lesson planning:

> [SA] has made me realize that every student thinks differently and learns differently, and that you have to accommodate all learning styles. And you just have to go in and find out what makes each child tick, and then adapt your lessons to that.

Some teachers described ways they already differentiated instruction before SA; these statements were not coded in this category because the focus was on how teachers changed their instructional practices. For most participants, they did not indicate that their overall instructional style changed as a result of participating in SA.

Use of Strategic Grouping Strategies

A few participants described SA's influence on the ways they grouped students in their classrooms. One teacher described how SA changed how she grouped students when they worked in pairs:

> I know this might seem like a tiny thing but I never really thought about trying to group your children as in putting this person with this person, and this person with this person – not your high with your low but your high with your middle and your middle to your low.

Another participant described how SA impacted the ways she selected peer buddies in her classroom; she explained, "If a kid is really good in math but struggles a little bit in reading, I pair him

up with a buddy so they maybe can help in math or, you know, vice-versa." Participants also indicated that they used SA principles to think about how they structured small group work in their classrooms. One participant described,

> I'm just doing a lot more flexible grouping than I did with them before. . . . I feel like it may give students who are weaker in some areas but stronger in other areas, it just gives them a chance to shine…and they have a chance to pick other skills up.

Overall, these participants described applying what they learned in SA about identifying strengths and weaknesses and recognizing students' learning needs to structure group learning in a way that was more effective and beneficial to all students.

Teaching Students about Learning

The SA Program emphasized teaching students about learning using a technique called "Learning About Learning" (LAL). LAL concepts could be taught as freestanding lessons (e.g., a lesson about memory) or they could be embedded within other academic tasks or lessons (e.g., embedding a short lesson about different types of memory when teaching multiplication facts). All participants were required to work with a group to develop a LAL lesson during one Practicum session. Participants were asked to try their lessons with their classes and report back to the group in a later session. Only one participant described using the LAL techniques in her classroom. Specifically, this participant taught in a small group setting and described presenting a lesson about social cognition lesson to her class. In an interview, this participant also described working with another teacher to co-teach a lesson about memory in their classes.

Although other participants did not describe implementing LAL lessons, several participants mentioned using some of the SA terms in their classrooms to help students understand aspects of their learning. However, participants qualified their statements about using SA terminology by saying they had only used a few terms so far. In general, teaching students about learning using LAL lessons seemed to be difficult for participants during their first year of implementation. Although most participants did not report incorporating LAL lessons into their teaching at this stage of implementation, a few participants indicated they hoped to use more of these techniques in the future. Of note, the SA program was structured so that participants received the bulk of instruction on LAL

during Practicum sessions, meaning that participants were still learning about these techniques while data was being collected for this study. Likewise, the school principal reiterated that the SA participants would shift their focus to implementation in the classroom during the following school year, which may have contributed to participants' hesitation to use LAL in their classes at the time of this study.

Summary of Implementation with the Whole Class

Although participants appeared to be less inclined to implement some of the key class-wide practices taught in SA (e.g., teaching students about learning using the ND framework, adapting instruction based on the ND demands of the curriculum, providing parents with resources and opportunities to learn about SA concepts and strategies), participants were enthusiastic about using strategies and focusing on students' strengths and affinities to increase student learning for their whole class. Findings regarding classroom implementation of SA were triangulated using data from the *SA Implementation Survey,* participant interviews, and classroom observations. Compared to implementation with individual students, classroom implementation was more readily observed through direct observations in classrooms. However, participant interviews were essential for uncovering the intentions behind participants' strategies and how teachers related their teaching practices to their SA experiences. As mentioned earlier, the de-emphasis on classroom implementation at the school level may have impacted participants' focus on using SA in these ways during the first year of the program when this study was conducted. Other factors that contributed to participants' ability and willingness to integrate SA practices into their teaching repertoire are discussed below.

Factors Influencing Implementation

Clearly, the implementation of new practices is not simple. Incorporating new strategies and methods into one's teaching repertoire takes time, effort, and motivation. The preceding discussion established that SA implementation took on a variety of forms and varied between participants. This section will discuss some of the factors that either facilitated or hindered participants' implementation of the SA Program in this study, as gathered from participant interviews, the *SA Implementation*

Survey, and group discussions during Practicum sessions and Assistance Team meetings. For more information regarding the number of participants that endorsed each theme, see Appendix L.

Facilitating Factors

The Assistance Team. All SA participants on the Assistance Team mentioned that using SA as part of the team process was a key factor facilitating their implementation. Several participants indicated the importance of being able to work together as a team. When asked what facilitated her implementation of SA, one participant stated,

> For me it's been working on the Assistance Team. I think that makes it easier. I think the teachers who did not work with the Assistance Team this year that went through the Schools Attuned process, I think they were perhaps at a disadvantage. I really think it helped us because we worked so closely together.

Another participant recounted, "We will sit at Assistance team and look at each other like, 'Which paper comes next?' But we have each other there as support." In addition to having the collegial support of other team members, some participants commented on the helpfulness of having a regular meeting time during which SA was discussed:

> One of the things that probably helps you the most is being on an assistance team and it coming up so frequently, because if I were not on an assistance team, honestly it might not be on my mind as much. . . . I really have to make an effort to use it. And I think I make more of an effort to use it because I'm on the assistance team.

Participants also described the benefit of hearing different types of strategies during team meetings and commented on how this impacted their use of SA in their own classrooms. For example, a first grade teacher explained,

> I feel fortunate because I get to hear all of these strategies that come up for children with different difficulties that they are having, and so I am able to take those ideas back. . . . That has been great for us – being able to hear those things and being more familiar with strategies to help children.

Overall, incorporating SA into the Assistance Team seemed to impact participants' implementation beyond simply using it in the pre-referral process. Most notably, participants indicated that the

collaborative component of the Assistance Team was essential to their successful implementation. The literature supports that professional communities can have a powerful impact in legitimatizing new instructional practices, improving teacher morale and teaching efficacy, and increasing the school-wide impact of staff development programs (Grodsky & Gamoran, 2003; Klonsky, 2002; Morris, Chrispeels, & Burke, 2003). Specifically, participants in the current study described how the team provided a natural environment for colleagues to think about SA concepts, discuss strategies to support student learning, review SA materials for new strategies, and support each other's implementation with students in their classrooms. And of key importance, this support was able to occur during a time slot already set aside by participants for weekly meetings. Capitalizing on an existing professional community appeared to be of key importance for participants' implementation in this school.

Supportive environment. Participants cited the importance of a supportive school environment as another factor influencing their implementation. On the *SA Implementation Survey*, all participants indicated agreement with the statement, "The principal is committed to the success of SA at my school." Likewise, several participants mentioned support from school administrators as a factor contributing to their use of the program during individual interviews. Other participants commented specifically on the support they received from other SA colleagues in the school: "I think that having such a big group that went through training together - we really rely on each other and stop by and ask each other questions about what they are doing and the decisions that they've made about their attuning." One teacher stated, "Well, I think it helps that there are other teachers using it, too. . . . [Another SA teacher] is right across the hall from me…we talk about what is working with each other's kids." Of note, the participants who described deliberately going to other teachers for support (e.g., to the teacher across the hall) were not members of the Assistance Team. Participants serving on the Assistance Team typically discussed receiving support from other team members during their weekly meetings, while participants who were not on the Assistance Team discussed seeking out support from other colleagues who participated in the program.

School-wide focus. Approaching the SA Program as a school-wide endeavor was an important factor for several participants. One participant explained,

> Our Assistance Team, of course, is using the information that we gather, and comes up with strategies that work, and they really come up with strategies that are the same ones that we learned; they use the [Management Resources Binder] and give [strategies] out to the teachers who have not gone to Schools Attuned – the same strategies. So with the team using the same forms, it's just more consistent throughout the school.

Likewise, several participants described how the SA Program fits in their school's goals and vision for the future. When asked what he thought would make SA thrive in their school, the principal stated,

> I think we have a desire to make it work. We have a desire to make our kids better. We have a vision, a 5 year plan, we want our kids to be at 97% before the year 2010. In order to do that, we have to be open to all kinds of ideas.

Participants seemed highly aware of the school's overall vision and how SA was viewed as a key method for meeting students' needs, as these school goals were reiterated throughout interviews.

Accessibility of resources. Participants cited the accessibility of SA resources and activities as important aides in their implementation. In particular, the notebooks (i.e., Course Syllabus and Management Resources Binder) and online resources were described as helpful reference materials. Participants were also observed to use the Management Resources Binder frequently during Assistance Team meetings. The follow-up Practicum sessions were also useful to some participants. One teacher described the importance of

> . . . being able to have that time to choose a student and practice it. That helps to be able to feel more comfortable with taking it back and doing it in the classroom. I do think having that opportunity to have a case study and to talk with other people about their case studies gives you a little more comfort in being able to come back and talk about it.

During Assistance Team meetings and individual interviews, participants referenced using specific things they learned during the Practicum sessions when developing strategies or planning class lessons.

Class size. Participants who worked with students in smaller groups (i.e., Title 1 teachers and the speech therapist) indicated that a smaller class size was conducive for implementing SA practices because

> . . . when I work with the student either one-on-one or in very small groups. . . even though I may see the student only once a week or twice a week, I find that sometimes I might have more of a view into what the child is really doing - what their strengths and weaknesses really are – even more than the teacher if she has a group of twenty-five students.

A Title 1 teacher stated, “It is nice having a smaller classroom where I can focus on the students more.”

Personal characteristics. Participants also described personal characteristics that helped them implement SA practices. For example, one participant stated, “Well I think with my background already, not only working with students but also evaluating students and meeting with parents as often as I am required to, as well as consulting with teachers, I think all of that helps.” Another participant indicated that her personal interest in the program content was important a motivating factor that influenced her implementation.

Observing student success. Finally, a couple participants described how observing successful outcomes as a result of the program encouraged them to continue using SA. One participant described using SA strategies saying, “I really think that once we see it working with the child, you’ll be more apt to implement.” This participant also indicated that she was more willing to use the Attuning a Student process after she was required to use it as part of Practicum:

> Going to the class and having to actually do a student has made - I mean, we had to do it, and at first it’s like, “Oh, gosh, I’ll never get all this done.” But then it’s so easy to do it. It’s just so easy to use it in the classroom.

Another participant explained the importance of seeing the effectiveness of the SA strategies on the Assistance Team and how that impacted teachers’ use of the strategies recommended by the team:

> We’ve seen a big difference in our testing percentages. . .because the interventions are actually working instead of you just doing the same old ones over and over. And the teachers, before, I guess, maybe would not go back and do exactly what you told them, and now I think they are, because they understand why they are doing it, they actually go back and implement the strategy.

Based on these accounts, Guskey's principle that successful student outcomes impact teachers' beliefs concerning a particular innovation appeared to hold true, particularly in regard to using specific practices, such as implementing new strategies. As a result of experimenting with new teaching practices and observing students' success, participants appeared to be more apt to incorporate these new practices into their teaching repertoire.

Implementation Barriers

Time. The indisputable, most reported barrier to implementation was time. All participants mentioned limited time as a hindrance to their use of the SA Program, although many acknowledged that time was an issue with any new initiative in school settings. When asked to identify what was specifically time consuming, several participants mentioned the Attuning a Student process, indicating "it is very time consuming if you do it right." One teacher commented, "It takes a long time to attune one child. And if there were some way that process could be modified that it was not so lengthy and time consuming, I think that it would have a better chance of being implemented in the regular classroom." Some participants indicated that Assistance Team meetings became longer when they incorporated SA procedures. The principal agreed that a great deal of work was required to incorporate the new process, but ". . . then we started working at the process; we realized that there were a lot of things we could have done up front before we came into the meeting." As participants became more familiar and comfortable with the process they reported that some of the time demands decreased. Participants also commented on other their responsibilities (e.g., literary assessments) that took away from their time to implement SA practices.

In addition to not having time to implement specific SA practices, a couple of participants described not having enough time to think about their implementation of SA. One participant stated,

> I think I've not been able to devote as much time to thinking about the things that I need to do. And I just do it as well as I can. . . . I think I could do it more intentionally and specifically than I am probably doing it this time.

Another teacher commented,

> I wish there were two of me: one to be the teacher and to teach the things I need to teach all day, and then one to be the analyzer, to do all of my assessments that I need to do, to think

about their strengths and weaknesses, and to think about and plan, you know, how I can effectively meet them. And it's a hard balance.

When discussing time as a barrier, two participants asserted that "it is time consuming. . . . [but] it needs to be if you are really going to look at that child the way you should, and that is understandable, but we just never have time in school to do everything we want to do." When describing how much time is involved with implementing SA, one teacher commented, ". . . but when you see that [the students] are actually liking learning then that helps. That makes it worthwhile."

Paperwork. Paperwork was identified by most participants as another major barrier to implementation, often related to the time factor. One teacher commented, ". . . the paperwork - that has been a really hard thing for me to keep up with as a classroom teacher." Another participant stated,

> To go through the whole process with a child with all the paperwork is so over the top for time consumption that it is not even really a reality for me as a teacher to put that into a day. But you can still take the best out of it and do it yourself without all the paperwork.

In addition to being time consuming, participants indicated that the SA paperwork was "overwhelming" and "cumbersome." Finally, two participants expressed concerns about classroom teachers not referring students to the Assistance Team because of the paperwork involved in the process: "I don't want to see teachers not refer a kid because they know how much it is going to involve." Some participants indicated that some of the paperwork in the Attuning a Student process was redundant and could be pared down. Others recommended that more of the paperwork be put online to reduce the time required to consolidate and transfer information.

Parent and student factors. Participants identified both parent and student issues as barriers to implementation as well. Specifically, participants noted difficulties with involving parents in the Attuning a Student process and having parent rating forms completed and returned. When discussing their difficulties with involving parents in the ways recommended by SA, some participants mentioned their hesitations about using the SA terminology with parents. For example, one participant stated,

> A lot of the parents might not understand that because it's very, very technical language, and it almost looks like something that would come from the doctor's office as opposed to from a teacher, so I think it would be kind of scary for a lot of our parents.

In regard to specific student characteristics that created a hindrance to implementation, one first grade teacher described talking to students about their learning saying,

> I find that in some children, you can talk to them and they understand where you're coming from, but there are some children that, when you sit down and try to have that one-to-one talk, they're just gonna say what they think you want them to say. And I'm not sure they're really able to have that conversation yet.

A second grade teacher made a similar comment about getting students' input on their learning strengths and weaknesses, commenting, "You know, with the ones that you're really struggling to figure out, they're not able to communicate that. They're just not able to do that yet." Although participants seemed interested in engaging students and gaining their input, some teachers – especially those with younger students – had difficulty involving students at the level suggested in the SA Program.

Schools Attuned factors. A few participants indicated that they needed more review of the Schools Attuned content and processes in order to fully implement the program. One participant stated, "I'm just not comfortable with it. . . . I don't feel like I am adequately able to take a child through the whole demystification process and accurately do it. There is too much involved and I have had very little practice of doing that." The same participant commented,

> I would love to have seen more of the review of the components. . . I'm having to rely on my memory a lot. . . [In Practicum] when we have a homework assignment, I am looking at it going, "Oh my gosh, I don't remember how to do that."

A couple of participants also appeared to misunderstand some of goals of the SA Program, which likely created a barrier to their implementation. For example, one participant commented,

> I just don't think that there's anyway that you can attune all of your class. I think it's great, you know, not having to pick – I would like to be able to attune more. You know, pick five and do them. But the whole class - not so much.

However, the SA Program does not endorse using the Attuning a Student process with every student in the class. This teacher's perception that she was expected to attune all of her students appeared to make her see the program as unrealistic, thus negatively impacting her implementation or, at least, her perception of her own implementation.

School factors. Finally, participants identified several school factors as barriers to their implementation. A couple participants, including the school principal, commented on the high demands placed on Assistance Team members with the added SA procedures. Specifically, the new procedures required more paperwork, classroom observations, and a work sample analysis for each student.

Participants also commented on the challenge of involving school staff who had not participated in the program. Specifically, a Title 1 teacher explained how her implementation was limited because she did not work with other SA teachers: "Since I am not a regular classroom teacher and we don't have classroom teachers who are implementing. . . . I've been working with a group of teachers that have no knowledge of Schools Attuned because I only work with fourth grade." Several participants mentioned how this barrier would be alleviated as more teachers participated in the program.

Implications of Participants' Implementation

A number of participants commented on how they expected SA to impact their school in greater ways as more teachers participated in the program. One participant commented, "The more people who are trained, I think we'll be able to have a better conversation about, you know, as that child is going through the process. And that will just help to keep it fresh in all of our minds." Another teacher described,

> I think it will help as far as when more of us get trained you will be able to talk between grade levels. "Well what was going on with this, did you do anything with Schools Attuned last year?" And you can sort of build on that sort of thing the more that, the more we go through the process of it.

Participants also anticipated involving parents in the SA process more when the program was implemented by more teachers in the school. One participant stated,

> I think, if we do get to a point where all the teachers are trained, where we are able to give workshops and do more things like that, and maybe do in our PTA meetings or something like that with parents, I think I would feel more comfortable in doing that with the typical parent that we have in this area.

Another participant described being able to conduct more parent education in the future, saying, "I can see that coming, perhaps when there's more teachers involved in the Schools Attuned process, when it's more of a school-wide issue; I don't feel like it is yet."

Nonetheless, participants reported a number of positive student outcomes associated with their use of SA. When discussing individual students, eight of nine teachers described positive student gains for students with whom they were using SA techniques. Outcomes included increased academic progress, better organization, improvements in attention, decreased student frustration, more frequent use of strategies at home, more self-confidence, and an increased ability to talk about learning with the teacher. Six of nine teachers described class-wide improvements as a result of their involvement with SA, including increased academic performance, confidence, motivation, student involvement, and interest in learning.

Although participants reported multiple ways in which SA impacted how they worked with students, their confidence in using new teaching practices and their ability to incorporate some aspects of the SA Program appeared to be still developing at the end of their first year implementing the program. Although some changes in instructional practices were apparent, participants required more than one year to implement the program fully. Not only was more time needed for participants to experiment with new techniques and make adjustments in their own teaching practice, changes in school processes also took time. The Assistance Team provided one example of this, as it took several months to design and "fine tune" their new procedures in order to become more efficient. However, in order to sustain momentum and build in the time necessary for effective change, participants must believe that these efforts and changes are worthwhile and important to their teaching practices. As mentioned in the introduction, "self-sustaining, generative change" described

by Franke et al. (1998) involves more than incorporating new skill sets into one's teaching, but would require teachers to change the ways they think in order to facilitate ongoing growth and effective problem solving in the classroom. Participants in this study described multiple ways in which their thinking was impacted by the SA Program. These themes and the concept of lasting change requiring shifts in thinking are explored in the following chapter.

CHAPTER 5

FINDINGS: CHANGES IN THINKING

Teachers' behaviors in the classroom are presumably closely related to their cognitions (Artiles, Mostert, and Tankersley, 1994). When considering the process of educational change, it appears that educators' existing belief systems about student learning and about their roles as educators influence their willingness and likelihood to implement new instructional practices (Guskey, 1988; Sparks, 1988). Yet, in his model of educational change, Guskey has suggested that meaningful changes in teachers' thinking follow changes in behavior (Guskey, 2002). In fact, according to Guskey's model, the experience of success with students after using new practices results in lasting changes in teachers' thinking. At the end of Chapter 2, I presented a circular version of Guskey's model of teacher change, proposing that teachers come to professional development experiences with their own sets of beliefs and attitudes, which influence how they implement new instructional techniques; when their implementation leads to successful outcomes, this further shapes teachers' thinking.

Through the course of this study, participants repeatedly described ways that the SA Program changed how they thought about their students, teaching, and learning in general. Yet, research has suggested that changes in cognitions are difficult to assess through self-report alone, indicating that a multi-method approach is appropriate when studying changes in teachers' thinking and cognitions (Kagan, 1990). Thus, teachers' cognitions in this study were examined using several different methods in order to assess their thinking about student learning and meeting the diverse needs of students' needs in the classroom. First, participant interviews were analyzed for themes related to changes in thinking. The comprehensive data analysis process for developing themes was discussed at the end of Chapter 3. Data included in the analysis included the two semi-structured interviews conducted at the middle and end of the school year, as well as informal conversations with participants following classroom observations. Field notes from Practicum sessions and Assistance Team meetings also proved to be

beneficial for identifying ways participants described changes in their thinking. However, the literature on teacher beliefs has indicated that an individual may not be able to clearly communicate her own belief system (Kagan, 1990). Therefore, problem-solving vignettes and a concept mapping exercise were incorporated into the study to tap into participants' thinking and problem-solving processes that they may not address or articulate in a more traditional interview setting.

Themes from Interviews and Field Notes

During mid-year and end-of-year interviews, participants were asked to describe ways SA influenced how they thought about their students. Most participants were able to articulate how SA influenced the way they viewed students. However, even beyond the ways they thought about individual students, participants' speech was sprinkled with comments regarding how SA impacted their thinking in the classroom. Quotations from interviews and field notes were initially coded using the broad code "Changes in Thinking." After all data was coded and reviewed for consistency, quotations identified as expressing changes in thinking were organized into themes and sub-themes using the networking tool in Atlas.ti. The analysis resulted in the following key themes related to participants' changes in thinking following SA: (a) fuller understanding of students' learning, (b) broader view of students, (c) deeper understanding of neurodevelopmental constructs, (d) expanded view of students' problems, (e) greater emphasis on strengths and affinities, (f) new conceptions about teaching, (g) and increased intentionality in teaching. Specific information regarding the number of participants who endorsed each theme is included in Appendix M.

Fuller Understanding of Students' Learning

Participants' descriptions of their implementation of SA were frequently accompanied by references to how the program influenced their understanding of how children learn. Several participants described how SA shaped their broader understanding of how students learn and what students might need in the classroom setting. One participant discussed how "it just makes you more aware of what you can do to help." Another teacher gave a specific example of how SA impacted her understanding of students' needs; she explained how SA helped her

> . . . [be] more understanding of actions of the children, you know, things that they need, outlets of energy that they need, or understanding that even when they are so active they can still be listening. It might take them being active to listen and understand what I am saying. I am aware of those things I think more so than I was before.

Likewise, the principal stated, "I just feel it is offering us a different vision of how kids learn, it is offering us different ways of looking at things."

The speech-language therapist described how her new perspective on student learning directly impacted her work with students in the speech-language and special education programs. She discussed how SA helped her understand how to conceptualize students' learning needs when developing IEPs (Individualized Education Program), saying,

> It is helpful to me to really try to gear my goals-when I'm writing my IEPs, I am thinking more about how I can make an IEP goal reflect what they are doing in the classroom and to help that child through their strengths, you know, develop that particular area of weakness.

She also described how she observed changes in other regular education teachers who participated in the program. She explained,

> What I loved about it . . . it was like the regular ed teachers were finally getting it, you know.' And I think they would admit to that too, because they've all sat in IEP meetings with us, and when we're talking about it, and we would talk about the child's strengths and weaknesses and why we were working on this but not necessarily working on this, and dah-dah-dah, and I think it really helped them to finally understand where we were coming from.

A few participants indicated that their new understanding of student learning was attributable to some degree to the new types of information they gathered when working with students using the SA model. Participants reported that gathering information about students from multiple perspectives to identify their strengths and weaknesses caused them to think more deeply about students' learning and classroom performance. For example, one teacher stated, "I think we got information that we had never gotten before, a different viewpoint, a different way of looking at that child, which helped us go for different strategies that maybe we wouldn't have tried before." In reference to the Attuning a Student process, another teacher stated, "Just sitting down and going through the attuning and looking at all of

that data…it forces you to look at so many components that are hidden sometimes when you are dealing with the surface and the obvious." Specifically, the information and data gathering components of SA program were instrumental in shaping participants' views and knowledge of student learning.

Broader View of Students

Several participants made statements such as, "I have a different understanding of this child" and "I look at my students differently now." A few participants described how SA helped them see the "whole child" or "[see] the child in a much broader way." Participants described shifting from thinking about students in terms of how they perform on specific tasks or subject areas to thinking about the students themselves and how their specific strengths and weaknesses impact their learning. One participant explained,

> I really feel like it helps you look at the whole child, which I know we all like to say that too often, but it really does. . . it has made me look at everything when I am looking at the child. I am noticing how they are picking up the pencil. I am noticing their social skills with the child sitting beside them.

Another participant described,

> I think that I sit back and think of them more as people instead of just students. Because it's easy just to do this academic, academic, academic. And I feel like when I approach them as students that are people I get better results. Because you kind of take the time to see where they are and to talk to them and they benefit from it, and so do you as their teacher.

In addition to looking at students through a different lens, several teachers described how SA impacted their ideas about obtaining students' input about their own learning. One participant described,

> I do try to have those conversations with them more to try and figure out what they think their weaknesses might be, or what I could do or what we could do in the classroom to make it better. I get their input on that. I think I think more about that than I ever did before.

Another participant described how SA prompted her to talk to students more about their learning and was surprised by the value of their input. One participant explained, "It really surprises me sometimes what the children will say when you ask them these questions about how they feel about school. I think it has,

it has been very enlightening in that respect." For these participants, SA not only broadened their view of students, but it also helped them recognize the value of gaining the students' perspective on his or her learning.

Deeper Understanding of Neurodevelopmental Constructs

The content knowledge about the neurodevelopmental constructs was described by many participants as key information for shaping their thinking about student learning. Some participants expressed how the specific knowledge they learned about the constructs had an impact on their own teaching and how they thought about students' learning. For example, one participant described, "Memory has been a big thing. I think that is probably the area I've learned the most about: long-term memory, short-term memory, active working memory and how it all comes together." Likewise, another participant expounded, "You know, until I did Schools Attuned, I really was not aware of how many children have short term memory retention problems." Beyond simply understanding the constructs, a few participants discussed the constructs in terms of relating them to specific academic tasks; for instance, during a Practicum session, one participant stated, "I knew writing was a complex thing, but now I see how many parts of the constructs go into such a simple task." Participants not only described gaining a more in-depth knowledge of the constructs, but they were also observed to use the neurodevelopmental terms more fluently in Practicum sessions, Assistance Team meetings, or casual conversations as the year progressed. When describing how participants' knowledge of the constructs had increased, the principal asserted,

> What is nice to see is when I am walking around and we are talking with these people, you hear words like "active working memory." You hear things like "long-term" and "short-term memory." You hear things like "attention." I had one lady talking about the social cognition of a child the other day. The language that we use and the understanding that we have I think has got to be – that is important.

Beyond simply knowing or using the SA terms in conversations, several participants described using the constructs and the SA framework as a lens for observing and thinking about students. Assigning codes for this theme was somewhat ambiguous because some participants clearly articulated how they used the neurodevelopmental constructs when thinking about students, while others alluded to

using the constructs as a guide, but in a less straightforward manner. Decision criteria were established, indicating that, for a quotation to be included in this particular theme group, it must make some reference to the constructs and consider multiple aspects of a child's learning. The following examples clearly describe how participants used the constructs as a framework for their thinking. One participant stated,

> The constructs – when I am observing a child they just automatically come into my mind, and I am analyzing the whole time, I am watching the children, making a judgment about where I think their weaknesses and strengths are based on those constructs.

Another participant further described,

> Every time I assess a child individually just for academic purposes, I see myself going through the constructs, I see gross motor skills, function problems here, or you know, concrete thinking. I just, I automatically go to the constructs and start thinking about the things that I am observing with the child and start trying to fit them in as weaknesses or strengths in the constructs.

In contrast, another participant stated: "Memory has been a big thing. I think that is probably the area I've learned the most about is long-term memory, short-term memory, active working memory and how it all comes together." Although the participant described thinking through the different components of a construct, she did not discuss how this related to student learning, so the quotation did not meet the criteria for this theme. The following quotation was considered ambiguous: "Instead of saying, 'Oh, that's just an attention problem,' or 'He has this problem,' I look at them as a whole child and figure out what constructs he has weaknesses in." Although ambiguous, this quotation was included as an example of using the SA framework as a lens for observing students because the participant referenced both the constructs and multiple aspects of the child's learning.

The SA Program seemed to involve an observable learning curve for participants, especially in regard to the neurodevelopmental constructs. For example, during the first two Practicum sessions (October and November 2005), participants appeared hesitant to use the neurodevelopmental terminology and had more questions about the constructs themselves than other content areas. Field notes from the second Practicum session indicated, "Participants frequently referred to the 'placemat' for definitions." (The "placemat" is a large, one-page document with the SA framework, including the constructs and corresponding functions and components, as well as definitions of the terms.) In contrast,

field notes from the fifth Practicum stated, “Participants are more fluent using the vocabulary in discussions, and they are making higher level connections.” Participants were also observed to use the neurodevelopmental terminology more fluently during Assistance Team meetings later in the year when problem-solving and proposing hypotheses for students’ difficulties. As participants’ knowledge and comfort level with SA content increased throughout the year, they were not only able to use the terminology more fluently, but several participants seemed to incorporate this knowledge into their problem-solving framework as they began to see students’ learning profiles in terms of these concepts.

Expanded View of Students’ Problems

All participants indicated that SA helped them identify students’ learning problems. Several noted that they were less likely to jump to conclusions about why a student was struggling due to SA. During a Practicum session, participants described how they were “not so quick to say what is wrong with a student.” One participant explained, “Before Schools Attuned I was more quick to make a judgment about the problem a kid might be encountering, when in actuality it may be something totally different than what I thought.” In particular, over half the participants described being less prone to label students’ difficulties as attention problems after SA. For example, one participant described, “Like attention – not automatically thinking, ‘They don’t pay attention that is why they are not doing their work,’ or ‘That is why they are not succeeding.’” Even when discussing attention-related difficulties, participants were observed talking about attention in different ways when discussing a student’s difficulties. During an Assistance Team meeting, one participant said, “Let’s throw out ADHD all together and talk about attention the way Dr. Levine does - it may be the production controls.” Instead of attributing a majority of student problems to “attention” or other problems commonly discussed by educators, participants described gathering more information and taking more time to think about and specifically define students’ problems as a result of participating in SA.

Rather than “jumping to conclusions,” all participants cited SA as helping them think more deeply about students’ learning and consider more hypotheses when identifying students’ strengths and weaknesses. One participant stated, “I think that I do slow down sometimes more now, and take the time to think about if it could be something else – if something else can be impacting that student besides the obvious.” Another participant explained, “I think that it has made us more aware that there are different

areas of difficulties besides just, well, he's not attending, or he's not doing this or he's not doing that. I think we look more at the underlying problem than the surface problem." A few participants also discussed how SA helped them think about students' learning when reading psychological reports on students. The principal explained,

> I think there's now a meaning for situations that we see when we get a psychologist's report back. Whereas, it was, more or less, the child didn't qualify, no big deal, he's a 70 IQ kid, but he's obtaining a 90% achievement - now what makes that work? In the past we've just said, "Okay, pat yourselves on the back, you're doing a bang up job, keep on doing what you're doing." I think now we understand that there could be more to it. It could be an attention issue, it could be a social adjustment issue for some of our children - all the different constructs we learned about, we recognize now that there's more to it than just a simple aptitude score and now an achievement score.

Rather than looking at the "surface problem" or the scores in a psychological report, participants conveyed that SA helped them to think more deeply to identify students' problems and understand students better.

Greater Emphasis on Strengths and Affinities

Not only did participants describe how SA helped them identify students' weaknesses, but they also discussed how the program impacted the ways they thought about students' strengths and affinities. When describing how she incorporated students' strengths in her classroom, one participant stated,

> I didn't do a good job of it my first year of teaching. I have always done it, but I think since Schools Attuned - common sense tells you that's a good thing to do - but Schools Attuned helps you understand more in-depth how important it is. It's not just good management, it's good instruction.

Another participant also stated how the program's emphasis on strengths reinforced what she already believed: "Well, this is already a big part of my philosophy, but I think that it reinforced that so much – to be able to find those strengths and build on those to attack the weaknesses." Interestingly, seven participants mentioned using students' strengths and affinities in their classes as a change in instructional practice (See Appendix N). Yet only three participants specifically talked about ways SA influenced their

thinking about strengths. These three participants seemed to already accept the principle of using strengths prior to SA, but the program's emphasis on this topic reinforced their previously held ideas and brought the concept of utilizing students' strengths to the forefront of their thinking. However, a few participants described experiencing a greater shift in their thinking when discussing affinities. One participant stated, "I think I have made a change in the way I look at affinities in children and how they can be used to strengthen." Another teacher described, "Before I didn't really pay attention to their affinities…so now I try to focus on that." While participants typically acknowledged thinking about students' strengths before SA, the idea of using students' affinities in learning was a new way of thinking for a couple participants.

New Conceptions about Teaching

In addition to discussing how SA influenced the ways they conceptualized students and student learning, participants described how SA caused them to reflect on their own roles as teachers. Participants reflected on their roles in a few different ways. A few participants indicated that their teaching behaviors did not change, but SA made them more aware as a teacher. One participant explained, "Well but it helped, like I said before, I guess it maybe hasn't changed a lot yet but it has made me more aware." Another participant described how SA led her to notice different things she might try in her classroom saying,

> I know maybe the change I should see is in me, you know, more so than in them. And I am seeing a change in myself in recognizing things. Maybe I haven't followed-through in trying those things or doing those things but at least I am recognizing the things that I should do.

Another participant described a shift in her teaching priorities as a result of SA. Following a classroom observation, she explained, "I realize they need to do more with the reading and more previewing. . . . I'm less worried about getting through everything and realize they need extra time before reading." In these instances, participants' descriptions of their changes in thinking – specifically, a new "awareness" of their own teaching practices and student needs – seemed to precede changes in teaching behaviors. In fact, this awareness did not necessarily result in any differences in classroom practices during the timeframe of this study.

Other participants described how they took what they learned in SA and attempted to incorporate it into their existing knowledge and way of functioning. One participant described this as "trying to blend it with who I am as a teacher." The same participant explained,

> I think the main thing is just trying to not have it this isolated knowledge and strategies – that you have to begin to mesh it with all the other things that work. And that's what I've worked on this year: to do it more and to incorporate it and blend it with the other. I don't feel like I wanted to replace everything I was doing, but I wanted to incorporate it.

Another participant provided a specific example of how she incorporated SA into her existing schema. Having received previous training in learning styles, the participant asserted,

> The learning styles. . . sits hand-in-hand with Schools Attuned, I think. And it has really made me a bit more in-depth at understanding the learning styles of the kids that I work with. It is almost like a higher level of learning style training because it has really helped me to understand those styles and what can keep a child from being successful in the classroom.

Clearly, for at least some participants, the knowledge and beliefs about student learning that they had before SA impacted the ways they interpreted and incorporated SA concepts into their teaching.

A couple participants commented on how SA impacted the expectations they had for students in the classroom. One participant reflected on a situation with a student in her class, saying,

> I guess my expectations for him should have been a little different. But I did expect him to be quiet and listen a little while everybody else was listening. I should have thought of a way to find a quiet way for him to get rid of his extra activity, but I didn't.

Following a classroom observation, another participant commented on the students being more active and energetic in the afternoon by saying, "But thanks to Schools Attuned, now I know that's all part of the learning process!" In both instances, teachers shifted their thinking so that behaviors that previously may have been considered "problem behaviors" were now understood and interpreted by the teachers in a different way.

Increased Intentionality in Teaching

Finally, when referring to changes in their thinking, a few participants described how their teaching did not change dramatically after SA, but that they were more intentional about using certain

techniques or teaching approaches because they understood why it was important as a result of SA. One participant reflected,

> Even this summer as we were going through some of the things I said, "Oh,we do that." But now it is like you know why you do it. You knew that you did it and you knew it would help the kids but maybe not necessarily why you were doing it or what you were building on and focusing on when you did it.

Another participant described how SA helped her understand what she already did in the classroom, saying,

> I mean I think I instinctively did a lot of the things that Schools Attuned did but didn't understand what I was doing. You know I think I just automatically, instinctively did it. But I think now that I do that more consciously than I did before.

Others expressed how SA made them "appreciate" particular practices, such as talking to students about their learning, and helped them "see how it's valuable."

However, the idea of intentionality begs the question: So what? Some participants indicated that there were no changes in their actual teaching behaviors, yet they regarded their increased understanding of why they do the things they do as important and useful. Others indicated that their increased understanding of why certain instructional practices are effective had some impact on their teaching behaviors in the classroom. For instance, a few participants indicated that their appreciation of specific instructional practices increased their frequency of certain teaching behaviors. One participant described how she used some strategies more often, saying, "I might do it a little more. I've always done them but maybe doing them more intentionally because of the things I learned last summer." Another participant described how classroom teachers benefited by having a better understanding of why the Assistance Team recommended specific strategies, which increased implementation fidelity for management plans. One Assistance Team member explained,

> The interventions are actually working instead of you just doing the same old ones over and over. The teachers sort of, before, I guess, maybe would not go back and do exactly what you told them, and now I think they are-because they understand why they are doing it-they actually go back and implement the strategy.

Summary

All in all, participants described numerous ways in which their thinking changed as a result of SA, ranging from having a changed perspective on students and student learning to reflecting on their own teaching behaviors and broadening their understanding of how their behaviors impact student outcomes. A key idea reflected in many of these themes was the impact of SA on teachers' problem-solving processes. Specifically, SA was credited with influencing the ways participants observed students, the process by which they identified student problems, and the manner in which they addressed students' learning needs. Changes in participants' problem-solving strategies were examined using a set of hypothetical vignettes, which are discussed in the following section.

Problem Solving Vignettes

In addition to analyzing participants' comments during interviews and asking directly how their thinking changed as a result of the SA Program, teachers were presented with hypothetical problem-solving vignettes about students struggling in the classroom. These vignettes were designed to assess teachers' problem solving processes in order to gain a general sense of how they approach students' learning difficulties in the classroom setting.

As mentioned in Chapter 3, phone interviews were conducted with SA participants prior to their participation in the SA Core Course. Because interviews were conducted over the summer break, two participants were unavailable to be interviewed. All SA participants and teachers in the non-SA comparison group were interviewed using vignettes at the end of the school year. The *Teacher Problem-Solving Vignettes* consisted of three short descriptions of hypothetical students who were struggling in the classroom (see Appendix D). Participants were first asked to describe how they would begin to work with each student if he or she were in their classes. They were then asked to describe what additional information they would want to know about the student, what they would identify as the student's main problem, what strategies they would use to help the student, and how they would know if those strategies were working. Finally, participants were asked how confident they felt that they would be successful in working with the student described in the vignette. In addition to discussing hypothetical vignettes, each participant was asked to describe a student in her class who was struggling with learning; for SA participants, this was the student she selected to "attune" for the Practicum portion of the program. When

applicable, data from participants' descriptions of actual students in their classes were incorporated into the discussion of the hypothetical vignettes as a means for comparing participants' responses to hypothetical versus actual students.

Data gathered through the problem-solving vignettes were analyzed in a few different ways. First, all interviews were coded according to participants' responses to the key questions indicated above (e.g., problem identification, additional information, strategies, etc.). Participant responses were then further categorized based on the sub-categories identified in Tables 6 through 13. After all the interview data were analyzed, responses were compared between SA participants' pre-SA and post-SA interviews and between SA and non-SA participants' interviews at the end of the school year. For clarity, these comparisons are discussed separately.

A Comparison of SA Participants' Responses from Pre-SA and Post-SA Interviews

Problem identification. Participants' responses were first analyzed according to how they defined students' problems based on the information provided in the vignettes. An overview of the types of problems participants identified from all the vignettes is included in Table 6. Due to the complicated nature of learning difficulties, it is not surprising that some participants identified more than one potential problem area for the students described. In order to clearly describe response trends across participants, Table 6 reflects the number of participants who identified each of the problem areas at least once across the three vignettes. In other words, the numbers reported in Table 6 indicate the number of *participants* who endorsed each type of problem rather than the number of specific *responses* (e.g., if a participant identified "attention" as the main problem on all three vignettes, this would be counted as "1 participant"). Response trends for individual vignettes are available in Appendix N.

Prior to attending SA, participants most frequently described students' problems in terms of the academic areas in which they were struggling (e.g., reading, math) or issues internal to the student (e.g., immaturity, self-confidence). When examining responses across the three vignettes, all participants used at least one neurodevelopmental (ND) term (e.g., attention, memory, language) to define students' difficulties. Responses that identified attention as the source of the problem were then excluded from the analysis, which resulted in only two of seven participants identified as using other ND terms prior to SA.

In other words, participants frequently referred to students' attention as an area of concern, but they did not use many of the other terms discussed during the SA program prior to attending the SA Core Course.

Table 6

Problem-solving Vignettes: Type of Problem (Pre-SA vs. Post-SA)

Type of problem	Number (%) participants	
	Pre-SA n=7	Post-SA n=9
ND Constructs: Total (Attention, Memory, Sequencing, Language)	7 (100%)	9 (100%)
ND Constructs NOT attention	2 (29%)	8 (89%)
Attention – total	5 (71%)	5 (56%)
-General reference to attention	3 (43%)	1 (11%)
-Specific aspect of attention	2 (29%)	4 (44%)
Memory – total	1 (14%)	3 (33%)
-General reference to memory	0 (0%)	2 (22%)
-Specific aspect of memory	1 (14%)	1 (11%)
Sequencing – total	1 (14%)	4 (44%)
-General reference to sequencing	1 (14%)	3 (33%)
-Specific aspect of sequencing	0 (0%)	1 (11%)
Language – specific aspects	1 (14%)	7 (78%)
Multi-step tasks	1 (14%)	3 (33%)
Ability to generalize	0 (0%)	1 (11%)
Behavior	3 (43%)	1 (11%)
Specific academic area	6 (86%)	3 (33%)
Specific diagnosis	0 (0%)	1 (11%)
Internal student problem (e.g., maturity)	6 (86%)	1 (11%)
Unsure/Need more information	0 (0%)	2 (22%)

In contrast, SA participants defined problems using more ND terminology rather than academic areas at the end of the school year. Even when excluding responses that referred to attention, eight of nine participants used other neurodevelopmental terms in at least one of the vignettes. Interestingly, when discussing attention during post-SA interviews, participants were somewhat more likely to refer to a specific aspect of attention rather than attribute problems to attention as a general construct. Also, only one participant attributed problems to internal student issues (e.g., immaturity) at the end of the year, whereas six of seven participants described student problems in this manner before SA. Furthermore, participants were less prone to identify students' difficulties as behavior problems during post-SA interviews.

Also of note, at the end of the year, two participants indicated that they needed more information than was provided in the vignettes to identify student problems because SA taught them to look deeper when identifying students' strengths and weaknesses, rather than "jumping to conclusions." Participants were encouraged to go ahead and state their hypotheses, but this shift in thinking was interesting and consistent with other comments made during individual interviews about how SA caused them to look more deeply at student problems. Overall, participants' responses shifted from identifying problems in terms of specific academic tasks, attention-related difficulties, or internal student factors to describing student problems in terms of more specific neurodevelopmental constructs.

Additional information. After initially discussing how they would approach the students described in the vignettes, participants were asked what other information they would want to know about each student. A summary of responses can be found in Table 7. A full summary of participant responses for each vignette is included in Appendix O.

Few differences were observed between responses from pre-SA and post-SA interviews regarding the types of information participants indicated that they would want to gather about the student. At both time points, participants most frequently indicated that they would gather more information about students' academic performance, including information about grades, performance in various subject areas, ability to complete specific types of academic tasks, and prior academic performance. During the post-SA interview, one participant indicated that she would analyze the students' work samples.

Table 7

Problem-solving Vignettes: Types of Additional Information (pre-SA vs. post-SA)

Type of information	Number (%) participants	
	Pre-SA n=7	Post-SA n=9
Info. about academic performance	5 (71%)	7 (78%)
-General academic performance	2 (29%)	4 (44%)
-Info about a specific academic area	4 (57%)	3 (33%)
-Prior academic performance	4 (57%)	3 (33%)
-Work samples	0 (0%)	1 (11%)
Assessment / Data collection	1 (14%)	3 (33%)
-Assessments of student performance	0 (0%)	2 (22%)
-Previous evaluation information	1 (14%)	0 (0%)
-Data from SA Views	0 (0%)	3 (33%)
-Parent rating scales	0 (0%)	1 (11%)
Further information about student functioning		
-Student's behavior	1 (14%)	3 (44%)
-Emotional functioning	2 (29%)	2 (22%)
-Social functioning	1 (14%)	0 (0%)
-Specific weak areas (e.g., memory)	3 (43%)	2 (22%)
Information from home	6 (86%)	7 (78%)
Medical information	0 (0%)	2 (22%)
Information from colleagues		
-Input from colleagues (e.g., specialists)	0 (0%)	2 (22%)
-Input from student's previous teachers	1 (14%)	2 (22%)
Student input	5 (71%)	5 (56%)
-Ask about student's interests	2 (29%)	1 (11%)

Participants also described gathering information about students' home life at both time points; specifically, participants discussed wanting more information about parents' observations of students at home and any information about home or family situations that may have an impact on the student's school performance.

Specific assessments or other data-gathering techniques were also mentioned by a few participants also means of collecting further information about the student's functioning. Specifically,

during post-SA interviews, two participants described conducting assessments to gather academic information, such as a running record to assess student reading or specific assessments to evaluate the student's reading comprehension. Three participants indicated that they would use the *SA Views* to gather information about student functioning, and one participant mentioned sending a formal parent rating scale home to the parent through the Assistance Team. During pre-SA interviews, participants did not mention gathering data from these types of assessments, although one participant indicated that she would look to see if the student had a previous evaluation (e.g., psychological assessment or educational screening).

Finally, participants mentioned gathering information about specific areas of student functioning at both time periods, including information about students' behavior, emotionality, and specific areas of weakness. Likewise, participants at both time points described asking students for input regarding their performance and why they think they are struggling in the classroom. During end-of-year interviews, a few participants described seeking input from colleagues about the student. Specifically, they described seeking input from teachers or specialists in the school who may be able to offer suggestions for how to work with the student, or the student's previous teachers in order to find out how he or she performed in earlier grades. No participants mentioned seeking input from colleagues during pre-SA interviews.

Overall, a few differences were observed regarding the types of information participants indicated that they would gather about the students described in the vignettes. Participants indicated at both time points that they would gather further information about students' academic performance in the classroom, information about the students' home life, and input from the students themselves. However, during end-of-year interviews, participants mentioned gathering specific data through assessments, questionnaires, or work samples, which were not discussed in pre-SA interviews. They also mentioned seeking input from colleagues more often during the end-of-year interviews.

Strategies. Participants were asked to describe the types of strategies they would use with the students described in the vignettes. Strategies were coded in two ways: (a) as either interventions (strengthening a specific area) or accommodations (bypassing a weakness), and (b) whether they addressed students' strengths or weaknesses. Each set of codes was considered to be mutually exclusive so that strategies could not be coded as an intervention *and* accommodation or addressing

strengths *and* weaknesses. Several situations arose in which these distinctions were not clear, requiring judgment calls to be made. If a strategy included any reference to bypassing an area of difficulty, it was coded as an accommodation, even if it might simultaneously strengthen another area of functioning. Likewise, any strategy that mentioned a student's strengths was coded as addressing strengths, even if a weakness was also mentioned. A summary of participant responses is included in Table 8.

Table 8

Problem-solving Vignettes: Strategies (pre-SA vs. post-SA)

Data Point	Total no. strategies	Mean no. strategies (range)	% strategies accommo-dations	% strategies utilizing strengths	No. of participants mentioning strengths
Pre-SA	68	9.71 (6-12)	33.82%	0%	0
Post-SA	83	9.22 (4-15)	30.12%	10.84%	5

The average number of strategies per participant was roughly equivalent between pre-SA and post-SA interviews, with an average of 9.71 strategies per participant in pre-SA interviews and 9.22 per participant in post-SA interviews. Participants indicated a similar number of accommodations and interventions at both time points as well, with 33.82% of the total strategies coded as accommodations in pre-SA interviews and 30.12% of strategies coded as accommodations at the end of the school year. However, responses were remarkably different when strategies were analyzed based on how many strategies incorporated students' strengths. Before SA, no participants mentioned using students' strengths when suggesting strategies, although one participant described using a student's affinities as part of a strategy. In contrast, 10.84% of the strategies mentioned during post-SA interviews incorporated the student's strengths, with five of the nine participants including at least one strategy that used a student's strengths.

Monitor success of strategies. When asked how they would monitor the success of the strategies discussed, participants' responses were generally consistent between pre-SA and post-SA interviews. Participant responses fell into seven categories: academic, behavioral, emotional, strategy monitoring,

student independence, teacher-focused changes, and general observations of improvement, as indicated in Table 9. The specific number of participant responses and examples of each category can be found in Appendix P.

Participants most frequently indicated that they would monitor the impact of their strategies by measuring academic progress using various methods such as successful work completion, test scores, grades, and work samples. Participants also frequently mentioned monitoring students' behavior; some methods were specific (e.g., behavior contracts, conduct log), while others were more general (e.g., observing the student spending more time on task, observing fewer disruptive behaviors). Improvements in students' emotional states (e.g., frustration level, anxiety, confidence) were also noted frequently by participants as indicators of success during pre-SA interviews, but mentioned less often during post-SA interviews. A few participants described other ways they would monitor their success with students, such as evaluating the success of specific strategies they implemented, observing students' degree of independence, monitoring their own behaviors (e.g., how often they have to give the student reminders), and general observations of the student during one-on-one or peer interactions.

Table 9

Problem-solving Vignettes: Monitoring Student Progress (pre-SA vs. post-SA)

Area	Examples	Number (%) participants	
		Pre-SA n=7	Post-SA n=9
Academic	Successful work completion, tests, grades, classroom performance, work samples	6 (86%)	8 (89%)
Behavior	Behavior contracts, time on task, conduct log, improved behavior, fewer disruptions	5 (71%)	7 (79%)
Emotional	Will observe less frustration, more confidence, less anxiety, better attitude	5 (71%)	3 (33%)
Strategy	Evaluate strategies to see if they are working or successful	3 (43%)	5 (56%)
Student independence	Observe students working and using strategies independently	1 (14%)	2 (22%)
Changes noted by teacher	Giving students fewer reminders, review personal notes	2 (29%)	1 (11%)
General observation of improvement	Observe improvement when working on-on-one, observe interactions in the classroom	2 (29%)	1 (11%)

Efficacy. Overall, judging participants' efficacy or level of confidence dealing with students' problems was difficult to assess using an interview format. Realizing that participants were having a difficult time answering this question during interviews, I began asking participants to rate their level of confidence in dealing the student's problem based on a scale of 1 to 10. These numbers provided some structure and ability to compare responses across the three vignettes for each participant, but it was difficult to make comparisons between participants. However, some broad conclusions could be drawn based on the data gathered.

In both pre-SA and post-SA interviews, participants had a tendency to rate their level of confidence in the medium high to high range (generally 7 or above on a 10-point scale). These findings were consistent with participants' ratings on the *Teacher Belief Questionnaire*, which did not indicate notable differences between the two groups (see Appendix Q for a summary of participants' ratings on

the *Teacher Belief Questionnaire)*. However, during pre-SA interviews, participants frequently referred to students they had worked with in the past who were similar to the students described in the vignettes when asked to assess their confidence level: If they had experienced success with a similar student in the past, they indicated a higher level of confidence in dealing with the student described in the vignette. Participants did not make as many references to similar students during the post-SA interviews, but instead indicated the resources they would need or the strategies they would try in order for the student to progress. Although the level of efficacy was similar at both interview points, the reasons participants expressed for their confidence appeared to shift from drawing on their own experiences to thinking about what resources and skills they already possessed (or could access) to help the student.

Strengths. Participants were not specifically asked to comment on students' strengths as part of the vignette interviews. However, when examining participants' responses, several participants spontaneously mentioned the student's strengths or described using students' strengths in strategies that they would develop for the student. Specifically, five participants mentioned students' strengths when discussing vignettes during post-SA interviews, while no participants mentioned strengths during interviews before SA.

SA Participants' Responses Compared to Non-SA Participants' Responses

As mentioned previously, both SA participants and non-SA participants from the same school were interviewed using the problem-solving vignettes at the end of the school year. Participants' responses were analyzed using the same criteria as described in the preceding section. Findings based on responses from SA and non-SA participants are discussed below.

Problem identification. A summary of participants' response patterns concerning the types of problems they identified across all three vignettes is provided in Table 10. More details on how participants responded to each vignette can be found in Appendix N.

Table 10

Problem-solving Vignettes: Type of Problem (post-SA vs. non-SA)

Type of problem	Number (%) participants	
	Post-SA n=9	Non-SA n=7
ND Constructs – Total (Attention, Memory, Sequencing, Language)	9 (100%)	7 (100%)
ND Constructs NOT attention	8 (89%)	5 (71%)
Attention – total	5 (56%)	5 (71%)
-General reference to attention	1 (11%)	2 (29%)
-Specific aspect of attention	4 (44%)	3 (43%)
Memory – total	3 (33%)	1 (14%)
-General reference to memory	2 (22%)	1 (14%)
-Specific aspect of memory	1 (11%)	0 (0%)
Sequencing – total	4 (44%)	0 (0%)
-General reference to sequencing	3 (33%)	0 (0%)
-Specific aspect of sequencing	1 (11%)	0 (0%)
Language – specific aspects	7 (78%)	5 (71%)
Multi-step tasks	3 (33%)	2 (29%)
Ability to generalize	1 (11%)	0 (0%)
Behavior	1 (11%)	2 (29%)
Specific academic area	3 (33%)	2 (29%)
Specific diagnosis	1 (11%)	1 (14%)
Internal to student (e.g., maturity)	1 (11%)	4 (57%)
Unsure/Need more information	2 (22%)	1 (14%)

When asked to identify students' problems based on the information included in the vignettes, non-SA participants were more likely than SA participants to attribute problems to attention-related difficulties. Likewise, SA participants were more likely to identify problems using other ND constructs, such as memory, sequencing, or language, sometimes referring to specific components within these constructs (e.g., "short term memory," "vocabulary and word comprehension"). Non-SA participants were also more prone to attribute students' difficulties to factors related to the child (e.g., immaturity, need for attention, motivation) compared to SA participants. These trends are similar to the differences between pre-SA and post-SA interviews, suggesting that SA influenced the ways participants described student

problems. Specifically, participants who attended SA had a tendency to use terms discussed as part of the SA program, such as “sequencing” or “memory,” to identify student problems. Overall, SA participants discussed problems with more specificity and attributed difficulties to factors related to students’ processing or the ND constructs, rather than internal student factors such as maturity level or motivation.

Participants’ problem identification trends when describing struggling students from their own classes (i.e., “target students”) were also analyzed in order to triangulate findings and verify trends between SA and non-SA participants. During individual interviews, SA participants were asked to describe the student they selected to go through the Attuning a Student process, while participants who did not take part in SA were asked to identify a student in their classes who struggled with learning. When asked to identify target students’ primary problem area(s), participants’ response trends when discussing target students were similar to their responses to the hypothetical vignettes. A summary of participants’ problem identification trends for target students is included in Table 11. A complete summary of participants’ problem identification trends is included in Appendix N.

When asked to identify the target students’ main problems, all of the SA participants identified students’ weaknesses using at least one ND term (e.g., memory, higher cognition, etc.). However, one should note that the participants went through the “Attuning a Student” process with the students described during the interviews, which facilitates problem identification using the ND framework presented in SA. Two non-SA participants also used one or more ND terms to describe student difficulties; of note, a participant who used several ND terms had also referred several students to the Assistance Team, which may have increased her exposure to this terminology. Participants in both groups described student problems in terms of academic concerns; however, SA participants described more specific areas of academic concerns compared to non-SA participants. In contrast to findings from the hypothetical vignettes, non-SA participants were not as likely to attribute problems to internal student factors (e.g., motivation) when describing their target students.

Table 11

Target Student Descriptions (Actual Students): Problem Identification Trends

Type of problem	Number (%) participants	
	SA participants n=9	Non-SA participants n=7
ND Constructs: Total (Attention, Memory, Language, Sequencing, Higher Order, Motor)	9 (100%)	2 (29%)
Attention (general references)	2 (22%)	1 (14%)
Memory – total	3 (33%)	1 (14%)
-General reference to memory	1 (11%)	0 (0%)
-Specific aspect of memory	2 (22%)	1 (14%)
Language – total	3 (33%)	1 (14%)
-General reference to language	1 (11%)	0 (0%)
-Specific aspect of language	2 (22%)	1 (14%)
Sequencing	0 (0%)	1 (14%)
Higher Order Cognition	1 (11%)	0 (0%)
Gross Motor	1 (11%)	0 (0%)
Processing	2 (22%)	0 (0%)
Academic	7 (78%)	4 (57%)
-Specific aspect of reading	3 (33%)	2 (29%)
-Specific aspect of writing	3 (33%)	0 (0%)
-Specific aspect of math	1 (11%)	2 (29%)
Behavior	2 (22%)	1 (14%)
Internal to student (e.g., maturity)	3 (33%)	1 (14%)
Student's environment (e.g., home)	0 (0%)	2 (29%)
Unsure	1 (11%)	0 (0%)

Overall, SA participants identified more areas of concern for target students struggling with learning than non-SA participants. One possible explanation is that SA participants had more hypotheses about students' learning difficulties. During interviews, participants described how SA impacted how they observed students in learning environments and the amount of information they collected about students; which may have contributed to their ability to make specific observations about students' learning needs and develop multiple hypotheses about their potential weaknesses. SA participants had also already gone through the Attuning a Student process with their target students, meaning that they may have spent additional time thinking about and analyzing students' learning compared to non-SA participants.

Other sources of information. As mentioned previously, participants were asked review the hypothetical vignettes and then describe what other information they would want to know about each student. Responses are summarized in Table 12. More detailed information about participants' responses can be found in Appendix O.

Table 12

Problem-solving Vignettes: Types of Additional Information (Post-SA vs. Non-SA)

Type of information	Number (%) participants	
	Post-SA n=9	Non-SA n=7
Info. About academic performance	7 (78%)	4 (57%)
-General academic performance	4 (44%)	1 (14%)
-Info about a specific academic area	3 (33%)	1 (14%)
-Prior academic performance	3 (33%)	1 (14%)
-Work samples	1 (11%)	1 (14%)
Assessment / Data collection		
-Assessments of student performance	2 (22%)	3 (43%)
-Previous evaluation (e.g., psychological)	0 (0%)	2 (29%)
-Data from SA Views	3 (33%)	0 (0%)
-Parent rating scales	1 (11%)	0 (0%)
Further information about student functioning	4 (44%)	3 (43%)
-Student's behavior	3 (44%)	2 (29%)
-Emotional functioning	2 (22%)	2 (29%)
-Specific weak areas (e.g., memory)	2 (22%)	0 (0%)
Information from home	7 (78%)	6 (86%)
Medical information	2 (22%)	6 (86%)
Information from colleagues	4 (44%)	5 (71%)
-Input from colleagues (e.g., specialists)	2 (22%)	1 (14%)
-Input from student's previous teachers	2 (22%)	5 (71%)
Student input	5 (56%)	1 (14%)
-Ask about student's interests	1 (11%)	0 (0%)

As indicated in Table 12, both SA and non-SA participants frequently mentioned obtaining information from home, including details about the home life and what parents observed in the home setting. A few participants also mentioned gaining input from parents regarding the types of strategies that have worked with the child at home. SA participants frequently mentioned that they would want more information about the students' academic performance, including information about specific academic areas that were not discussed fully in the vignettes, previous academic performance, and work samples. Non-SA participants indicated that they would want to know about students' medical history and current medications more often than SA participants. Non-SA also mentioned seeking input from the students' previous teachers more often than SA participants.

Overall, response trends between SA and non-SA participants were somewhat different than between pre-SA and end-of-year interviews. Specifically, no participants described using specific assessment techniques to gain more information about students' academic functioning during pre-SA interviews, yet several participants indicated that they would use individual assessments or rating forms to gather information when interviewed after participating in SA. However, non-SA participants indicated that they would use individual assessments with students to gather more information, suggesting that this difference may not be related to SA. One possible explanation could be the timing of the interviews: with end of year assessments in progress, teachers may have been thinking more about assessment at the end of the school year compared to the summer months before a new year began. Non-SA participants' more frequent inquiries about students' medical history was often mentioned in connection to ADHD diagnoses or medications. Although this finding is consistent with the previously observed tendency for non-SA participants to attribute more student problems to attention-related difficulties, it may also be influenced by participants' perceptions of how the SA Program or myself as the interviewer viewed medical treatment for ADHD. While the program does not take a stance on medical treatments, its de-emphasis on categorical labels for children in schools may have impacted participants' willingness to bring up ADHD or medical treatments during interviews.

Strategies. As described in the previous section, participants' proposed strategies for students described in the vignettes were coded according to the type of strategy (i.e., accommodation or intervention) and the focus of the strategy (i.e., weakness or strength). As observed with pre-SA and

post-SA interviews, the average number of strategies proposed was also similar between SA and non-SA participants. In regard to incorporating strengths into the recommended strategies, non-SA participants only mentioned strengths in 5% of the proposed strategies, compared to 10.84% for SA participants. Although this contrast was not as profound as in pre-SA and post-SA interviews, findings suggested that participants who took part in SA had a greater tendency to incorporate strengths into their strategies for students. Response trends related to strategy use for all three groups are summarized in Table 13.

Table 13

Problem-solving Vignettes: Strategies Described by All Participants

Group	Total no. strategies	Average no. strategies (range)	% strategies accommo-dations	% of strategies utilizing strengths	No. of participants mentioning strengths
Pre-SA	68	9.71 (6-12)	33.82%	0%	0
Post-SA	83	9.22 (4-15)	30.12%	10.84%	5
Non-SA	60	8.57 (4-13)	18.33%	5.00%	2

Monitor success of strategies. In general, SA participants and non-SA participants responded similarly when asked how they would monitor their success with students described in the vignettes. Participants most frequently mentioned academic markers of success, followed by behavioral improvements. Details regarding the number of participants who endorsed each area of success are included in Appendix P.

Efficacy. Overall, most participants indicated that they felt reasonably confident that they could be successful with the students described in the vignettes. Non-SA participants had a tendency to express more uncertainty about their efficacy, conveying a medium to medium high level of confidence when discussing vignettes. In contrast, end-of-year interviews with SA participants typically reflected medium high to high levels of efficacy. However, these ratings are subjective and are not based on a fixed scale that would be consistent for different participants, so findings are not conclusive. Similarly,

participants' ratings on the *Teacher Belief Questionnaire* indicated similar ratings of efficacy across the two groups. Participants' ratings can be found in Appendix Q.

Nonetheless, an analysis of the types of comments participants made when responding to the interviewer about their confidence in being able to help the students described resulted in a few interesting distinctions. First, several non-SA participants commented about situations that would be out of their control when discussing their confidence in being able to help the students described in the vignettes. For example, one non-SA participant stated, "If they do have ADD, and they have been diagnosed but their parents won't give them the medicine, I mean, sometimes there is nothing you can do. You know, it's like out of your control." Another non-SA participant asserted, "Now if there is a medical reason then it is very difficult, and something they can't control, then it is very difficult to change a behavior." Similar comments about not being able to be successful if a child's difficulties were related to attention or medical problems were not observed during interviews with SA participants. One possible explanation for this difference could be that SA impacted participants' perspective of the types of resources and strategies available to them to help students; in other words, the program may have added to their "toolbox" of strategies to help students be successful. However, participants may have also filtered their responses based on their assumptions about what I, the interviewer, wanted to hear. In particular, if participants felt that the SA Program does not promote labels or medication, they may have withheld these comments during interviews.

Second, non-SA participants frequently made references to having similar students in their classes when reading the vignettes. When participants had experienced success with a similar student, they were more likely to indicate a higher level of efficacy with the hypothetical student. Likewise, a few participants were not successful with similar students and indicated a lower level of confidence. Interestingly, this trend was also observed during pre-SA interviews, but not during post-SA interviews. In contrast, SA participants were more likely to relate their confidence to the resources and strategies that were available to them, rather than focusing on their personal teaching experiences.

Strengths. As mentioned in the earlier discussion of pre-SA and post-SA interviews, five participants spontaneously mentioned students' strengths, although no interview questions were specifically designed to elicit this information. In comparison, only two non-SA participants mentioned

students' strengths during interviews at the end of the school year. Likewise, when discussing case study students from their current classes, five SA participants mentioned students' strengths in their descriptions, compared to only one non-SA participant. During interviews, SA participants asserted that SA impacted their views of students' strengths and helped them understand the importance of using strengths in the learning process; data from participants' descriptions of both hypothetical and target students indicates that participants who participated in SA discussed students' strengths more often.

Summary of Findings from Problem-Solving Vignettes

Analysis of participants' responses to the problem-solving vignettes were useful for identifying several trends between participants before attending the SA, participants after attending SA, and non-SA participants. When identifying students' primary areas of weakness, participants who had not taken part in SA (pre-SA and non-SA groups) were more likely to attribute problems to attention-related difficulties, whereas SA participants identified problems using neurodevelopmental terms other than attention. This finding was supported by SA and non-SA response trends when identifying problems for target students in their classes. Pre-SA and non-SA participants were also observed to attribute student problems to more internal factors than SA participants, but this finding was not supported by descriptions of target students.

Participants' responses when asked what additional information they would want to know about the students was similar across all three groups; the most common responses included more information about various areas of academic functioning and information on the students' home life. The mean number of strategies developed by participants was also similar across all groups. However, SA participants were more likely to incorporate students' strengths into their strategies. Participants expressed similar methods for monitoring the success of these strategies; namely, participants described a variety of academic and behavioral markers which would indicate the student's success. When asked how confident they felt about being able to help the students described in the vignettes, most participants indicated a moderate to high level of efficacy. However, participants who had not taken part in SA were more likely to refer to their personal experiences when discussing efficacy, while SA participants referred to resources and strategies that would help to insure the student's success.

Concept Maps

Concept maps have been identified as a useful tool for assessing how individuals represent their thinking by highlighting the concepts they consider important and how these concepts are organized and interrelated (Lavigne, 2005). In a study designed to examine innovative methods for tracing conceptual change among prospective teachers, Morine-Dershimer, et al. (1992) identified concept mapping as an effective means of assessing education students' ideas about effective teaching, providing broad and varied information about participants' conceptions of teaching. In the current study, participants were asked to create concept maps to describe how they addressed the needs of diverse learners in their classrooms. They were instructed to use the map to convey things they do or things they think about when considering how to meet students' learning needs. Participants were then asked to describe their maps to the interviewer. Both SA and non-SA participants completed the concept mapping exercise during mid-year interviews; participants reviewed their maps at the end of the school year and were given the opportunity to make adjustments or changes.

Concept maps were examined for both structure and content. Based on the structural coding system used by Winitzke and Kauchak (1995), each map was scored in terms of the number of concepts included, the total number of chunks (i.e., each superordinate concept with its contiguous subordinate concepts), number of levels (depth), and number of chunks at the widest point (width). A Hierarchical Structure Score was then calculated using the sum of the width and depth scores. Figure 7 provides an example of one participant's concept map. (Note: Figure 7 is a digital representation of what the participant drew by hand.)

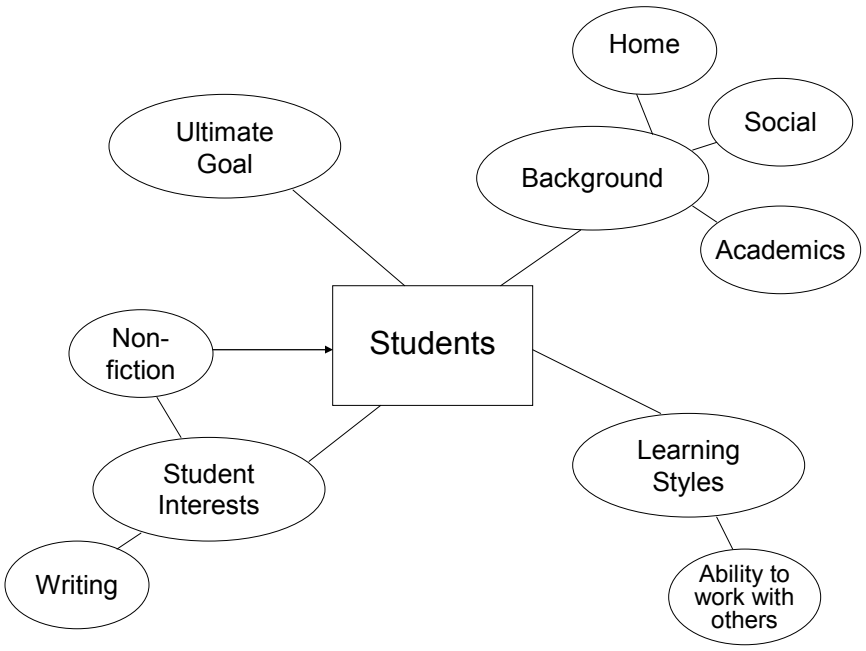


Figure 7. Example concept map from a SA participant

The example concept map presented in Figure 7 includes ten concepts, as indicated by the statements in oval shaped figures; the central concept ("Students") was excluded from the total count. Four "chunks" were included in the sample map, as indicated by the number of superordinate concepts with contiguous subordinate concepts: "Students," "Background," "Learning Style," and "Student interests." "Ultimate Goal" was not considered a "chunk" because it had no subordinate concepts connected to it. Depth was defined as the number of levels in the map, starting with the central concept ("Students") and moving outward; the sample map had three levels. The width was the largest number of chunks at a given level. The sample map had a width of three, as "Background," "Learning Style," and "Student interests" were all placed on the second level. Finally, the Hierarchical Structure Score was calculated by adding the width and depth scores, resulting in a score of six.

Structural dimensions were calculated for the concept maps of each SA and non-SA participant. The mean, standard deviation, and range of these structural dimensions for each group are described in Table 14.

Table 14

Structural Analysis of Concept Maps for SA and Non-SA participants

	SA Participants (n=9)			Non-SA Participants (n=7)		
	M	SD	Range	M	SD	Range
Concepts	12.56	4.003	8-18	15.14	5.872	7-25
Chunks	4.33	1.871	1-7	4.29	1.976	1-7
Hierarchical structure	6.89	2.028	3-9	7.29	2.360	3-11

Overall, the structure of the concept maps was similar between SA participants and participants who did not take part in the program. Although the mean number of concepts was slightly higher for non-SA participants, this difference was not statistically significant based on an independent samples t-test ($p=.312$). Likewise, participants had a comparable number of "chunks" in their maps, and created maps with a similar mean hierarchical structure.

A content analysis of the concept maps was conducted to understand how participants in both groups described the ways they approached meeting the needs of diverse learners in their classrooms. The coding system used to analyze the data was modeled after Artiles and McClafferty's study of preservice teachers who were asked to create concept maps to describe their thinking about effective teaching (Artiles & McClaffery, 1998). First, key categories were identified, and then individual maps were reviewed in order to create subcategories. As subcategories were more clearly defined, the maps were again reviewed to insure consistency and clarity. Table 15 includes the categories and subcategories the emerged from the analysis of participants' maps, as well as how many participants included each subcategory on their maps. In some instances, participants may have had several "concepts" that fell under the same subcategory; however, Table 15 indicates how many participants included each theme in their map, even if the theme was present in multiple places on the map. For example, if one participant indicated that she thought of her students in terms of visual learners, auditory learners, hands-on learners, this may have been coded as three "concepts" in the structural analysis, but was only reflected as one theme in the content analysis, as all three "concepts" fell under the theme:

"Student characteristics: Learning Styles." Thus, the numbers in Table 15 reflect the number of participants who endorsed each theme and are not necessarily equivalent to the number of concepts reported in Table 14. Specific data indicating which subcategories were included on individual participants' maps (using participant identification numbers) is included in Appendix R.

Overall, SA participants included many more student characteristics in their concept maps. Several participants discussed students' learning styles and indicated that they made note of students' interests and affinities so they could incorporate these into their teaching. Some SA participants also discussed ways they considered students' personalities and social skills when deciding how to create a learning atmosphere where diverse students could succeed. A few non-SA participants mentioned students' level of academic functioning on their maps, particularly in terms of providing opportunities for gifted students to excel. However, in contrast to SA participants, most non-SA teachers did not mention ways students' academic levels or other personal characteristics impacted how they, as teachers, structured learning activities in their classrooms. Data from individual interviews indicated that many participants described how SA impacted they ways they viewed students, causing them to look at a student as "a whole child" or "seeing the child in a much broader way than just the student," which may explain why SA participants were more explicit about the various student facets they thought about when considering how to meet students' needs in the classroom.

Table 15

Categories and Subcategories Included in Concept Mapping Exercise

Categories	Subcategories	Areas/Examples	No. participants	
			SA n=9	non-SA n=7
Instruction	Curriculum	Discusses instruction in terms of subject areas	1	4
	Differentiating instruction	Visual, auditory, hands-on; centers; manipulatives; varying instructional style	4	3
		Hands-on, manipulatives only	0	2
	One-on-one	Speech therapy; work one-on-one with students in the classroom	3	4
	Independence	Degree of independence or teacher assistance needed	2	3
	Clustering/ Class grouping	Ability grouping	3	1
	Grouping	Peer buddies; small groups; strategic grouping	4	5
	Class-wide strategies	Concept maps, graphic organizers	2	4
	Strategies for individuals	Individualized strategies based on student needs	2	0
	Strengths	Build on strengths, use strengths to strengthen weaknesses	2	1
	Talk to students about learning	Help students understand how they learn	1	0
	Technology	Use technology in learning	0	1
	Classroom management	Love and logic model	0	1
	Seating in classroom	Considers students' desk placement	1	0
	Programs and projects	Class projects (e.g., Poetry night)	0	1
	Practical applications	Practical projects, build on prior knowledge; teaching citizenship	1	1
	Time	Time involved in teaching and preparation	0	2

Student characteristics	Academic functioning	Level of mastery; above or below grade level; reading level	4	1
		Examines previous work samples	1	0
	Interests, Affinities	Motivators; Personal goals; Incorporate interests into teaching	6	0
	Learning styles	Visual, auditory, kinesthetic; Group vs. individual learners	5	0
	Social skills	Ability to work in groups; Social cognition	2	0
	Personalities	Leaders, followers	1	1
	Gifted students	Discusses differences in instruction for gifted students	2	2
Assessment	Differentiating assignments	Giving students choices; adapting assignments and tests	3	1
	Evaluating students	Speech-language assessments and reporting results	1	0
	Surveys	Interest surveys, learning styles	2	0
Parents	Education	Awareness of speech-language issues	1	0
	Involvement	Regular contact with parents, class activities that involve parents	0	1
Personal attributes	Patience	Role as teacher requires patience	0	1
Resources	Support staff	Use of support staff, inclusion teachers	2	1
	Sch. Programs	Book room, Title 1 pull-out	1	1
Administrative	Paperwork	Speech-language paperwork and billing	1	0

Numerous components on participants' concept maps addressed aspects of instruction in the classroom. Both SA and non-SA participants discussed how they differentiated instruction, including ways they varied their instructional style by incorporating visual, auditory, or hands-on activities. Some participants also discussed how the use of centers helped them meet different students' needs. Participants in both groups discussed ways they grouped students in the classroom, sometimes grouping students with similar skill levels together, while sometimes setting up heterogeneous groups. SA and non-SA participants also described using "flexible grouping" in order to allow students to work in the setting that is most appropriate for their needs. Some teachers indicated that they worked with other

grade-level teachers to cluster whole classes based on ability in order to create a “high” and “low” group for particular subjects, typically math and reading. Finally, when setting up their maps, more non-SA teachers structured their maps in terms of specific subject areas (e.g., math, reading, science), indicating how their instructional techniques varied for each subject in order to meet students’ needs. As noted earlier, SA participants were more likely to include student characteristics as central concepts, rather than curricular subject areas.

Other themes that were endorsed by only a few participants included classroom assessments, parental involvement, school resources, and administrative work. With regard to assessment, SA participants were somewhat more likely to include ways they allowed for differentiated assignments and testing options on their maps. Two SA participants also indicated using surveys to assess students’ interests and learning preferences, while none of the non-SA participants indicated using these types of assessments in their classrooms.

Because pre-SA concept maps were not available as part of this study, participants were asked to identify what aspects of their maps they felt had been influenced by their involvement in SA. Four participants indicated their uses of students’ affinities and interests in the classroom were directly impacted by their involvement in SA. Another participant described how she used students’ strengths to address their weaknesses due to SA. Three participants also credited SA with changing the ways they grouped students in the classroom; specifically, they were more strategic in thinking about how peer buddies or small groups could be designed to support students’ learning needs. A couple participants also commented on how their ability to identify students’ weaknesses was shaped by their participation in SA. Other categories participants attributed to SA included the types of strategies used for at-risk students, noticing students’ social skills and their impact on learning, and working with parents and other teachers to support student learning. Overall, participants attributed more components on their maps to SA at the end of the school year compared to mid-year interviews.

Summary of Changes in Thinking

Interviews, field notes, hypothetical vignettes, and concept maps were all used to gain an understanding of the impact of the SA Program on participants' cognitions about student learning. Data gathered from each of these techniques were triangulated, thus contributing to a greater understanding of how the SA Program shaped participants' thinking about students, learning, and effective teaching.

Participants described how SA gave them a new lens with which to view students, enabling them to think about students with a broader perspective and to more precisely identify students' strengths and weaknesses. Participants' descriptions of students' learning indicated that SA impacted the ways participants identified students' problems, based on findings from both hypothetical vignettes and interviews about actual students in participants' classes. Specifically, they used more neurodevelopmental terminology when discussing students' learning difficulties than they did prior to SA and more than non-SA in the comparison group. Participants were also observed to focus on students' strengths more as a result of SA, which was consistent across data collection techniques.

When discussing student learning, participants reflected a deeper understanding of the neurodevelopmental constructs, which was evidenced by their problem-solving processes observed during interviews and when discussing the vignettes, as well as during conversations with colleagues. Participants also described having a better understanding of students' needs, the importance of incorporating strengths and affinities into the learning process, and the complexity of learning as a result of SA.

Participants not only shifted their thinking about students and student learning, but they also reflected on their own teaching and instructional practices after taking part in SA. The vignettes and concept maps demonstrated how participants incorporated students' strengths and affinities into their instruction. Participants also described understanding why particular techniques or instructional strategies were effective, while also becoming more intentional in their teaching after SA.

The changes in thinking assessed in this study were notable, with many of the key themes evident using different data collection techniques. Yet, how do changes in teachers' thinking ultimately impact student learning? The final chapter discusses how findings from this study fit into the proposed

conceptual framework explicating how professional development programs interact with changes in teachers' behaviors and thinking, as well as student outcomes.

CHAPTER 6

DISCUSSION

Proposed Model of Teacher Change

This study sought to investigate the process of teacher change for a group of participants who took part in the Schools Attuned Program. By taking a social constructivist approach to examine teacher change, this study not only looked at the influence of a professional development program on teachers' instructional practices and their beliefs about student learning, but also took into account the participants' broader school context, the factors impacting changes in participants' behaviors and thinking, and how a group of educators collaborated in order to make sense of the new information and experiences they gained through the program. A model representing the process of teacher change was proposed at the end of Chapter 2 based on Guskey's (2002) model of how professional development programs lead to change and a review of the literature on educational and teacher change. Findings from this study as they pertain to the model are discussed below.

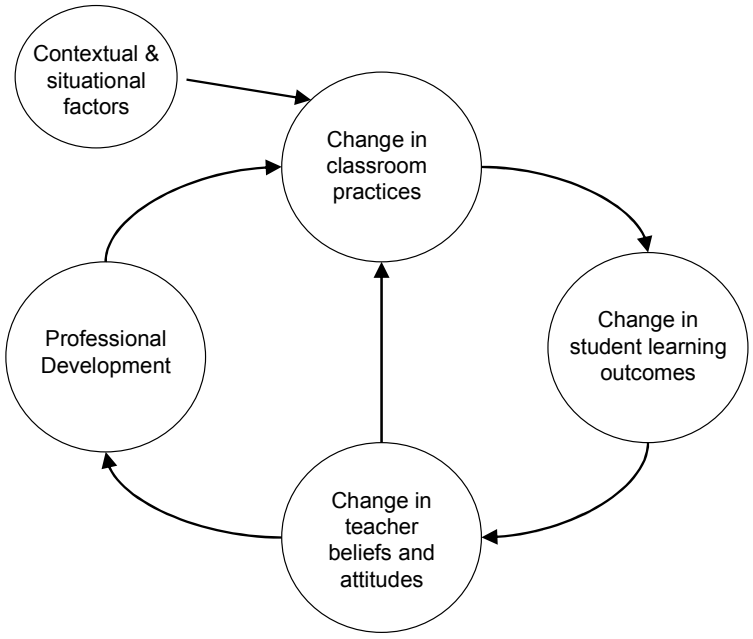


Figure 2. A proposed model to describe teacher change

Change in classroom practices. Participants described many ways in which they changed their classroom instructional practices after participating in the SA Program. When describing their implementation of SA practices with individual students, participants most frequently referred to collecting data to identify students' strengths and weaknesses and using interventions and accommodations to support students' learning needs. At the class-wide level, participants discussed strategies that they used to strengthen the functioning of all students and incorporating students' strengths and affinities into instructional activities. Most of the changes in instructional practices endorsed by participants involved improving classroom practices in which they were already engaged to some degree. For instance, teachers already used instructional strategies with students, but SA gave them fresh ideas and new ways of selecting and implementing appropriate strategies. Likewise, most participants indicated that they made an effort to incorporate students' strengths and interests into their lessons prior to SA, but participating in the program helped them take the use of strengths and affinities in learning to a new level. Many participants described tangible ways in which they incorporated strengths into their instructional practices, such as providing choices for writing assignments or projects and implementing strategies that leverage students' strengths. In general, participants seemed to be most successful implementing

practices that were already part of their teaching repertoire, taking these instructional practices to a new level based on their experiences with SA.

In contrast, participants had more difficulty implementing other aspects of the program, such as using Learning about Learning lessons to teach students about their own learning, and communicating with students and parents using SA terminology. Some participants expressed that they were hesitant to use these new teaching practices because they were not yet comfortable with the SA terminology and content, although a few indicated that they hoped to utilize these techniques in the future. Others did not view these practices as particularly relevant or useful for their students. Interestingly, these program components seemed to be relatively new to participants, which may have affected the degree to which they were implemented. Compared to using accommodations or interventions and incorporating students' strengths into their instruction, using a new vocabulary and framework for teaching students was a complex and involved process for most participants, likely contributing to their lower implementation of these practices. The question of relevancy and the cost-benefit analysis of whether implementing these practices was worth the time and energy required may have also contributed to participants' hesitancy to integrate these practices into their instruction.

Change in student learning outcomes. Guskey (2002) has claimed that teachers' observation of positive student learning outcomes in response to using new instructional practices leads to lasting changes in their thinking. Based on his model, teachers would "believe in," and thus continue to implement, teaching practices that worked. To some degree, this principle held true for participants in the current study. Participants most often described using SA strategies with students because they worked. By targeting students' learning needs more specifically and selecting strategies that were directly linked to students' strengths and weaknesses, participants observed the strategies to be more effective than those they had tried before SA. This was true for participants' implementation with students in their own classes, as well as on the Assistance Team. Assistance Team members and referring teachers who were not team members commented on how the strategies recommended by the team were successful, even to the degree that some students no longer needed Assistance Team support. Similarly, participants reported positive outcomes as a result of utilizing students' strengths and affinities, as teachers observed increased interest in learning and self-confidence as a result of their changes in

instructional techniques. In these instances, the direction of change proposed by Guskey appeared to be accurate. Franke and colleagues (1998) would term this type of change "self-sustained change," for teachers experimented with new practices and changed their behaviors as they discovered techniques that worked. However, it would be difficult to claim that the SA practices embraced less frequently by participants in this study were not implemented due to *unsuccessful* student outcomes. Namely, most participants did not have an opportunity to observe the impact of these practices on students because they did not implement them at all. Instead, other factors seemed to impact participants' willingness or ability to initiate a change in their classroom practices.

Contextual and situational factors. The literature on educational change has suggested a number of contextual factors that could impact the success of professional development programs, several of which were apparent in this study. The school environment, implementing SA on a school-wide level, and having colleagues with whom to discuss implementation issues were cited by many participants as crucial to their successful implementation of SA. In contrast, having the time to implement new practices, complete paperwork, and consciously integrate SA into their classroom routines were described by participants as barriers to implementation. On the other hand, a few participants mentioned that, although SA practices were time consuming, they were "worth it" because participants observed positive outcomes with students as a result of using SA. However, how did participants go about deciding which practices were worth trying in the first place? Participants clearly experimented with some practices, adopting those which were successful, but understanding what caused them to initiate these practices in the first place is not explained by Guskey's model of change.

Change in teacher beliefs and attitudes. Participants come to any professional development program with their own sets of beliefs and attitudes that impact the ways they receive and interpret what they learn. In other words, a person builds on what she knows, integrating and organizing new knowledge into existing schema. Teachers entered into the SA program with existing ideas about how students learn based on their teaching experiences, teacher education programs, other professional development opportunities, and their own life experiences. Participants seemed to most readily initiate SA practices that easily fit into their existing schema, such as using new interventions and accommodations with students. However, new ideas or practices take more time and effort, requiring

participants to first change their thinking in order for the new techniques to be considered worthwhile. In other words, when a teacher can easily integrate a new instructional practice into her teaching and it fits her existing beliefs about what helps students learn, she will likely be willing to try it in her classroom. If she sees that it does, in fact, have a positive impact on student learning, these new techniques would become part of the teacher's schema of effective teaching practices. However, when a teacher encounters new techniques that are either difficult to implement or not part of her existing belief system, it is unlikely that this new technique would be worth the time and energy required to implement it with fidelity. Yet if this principle proves true, teachers would be more prone to implement these types of techniques if the difficulty was decreased – through implementation support or additional resources – or if teachers' thinking changed in a way that caused them to see the new practice as worth the investment to try.

In the current study the SA Program appeared to influence how participants thought about their students and learning, as well as their own teaching. Some participants described trying to take what they learned in SA and integrate it into their existing knowledge about effective teaching. Several participants discussed how SA made them more aware of what they can do to support student learning and helped them understand why certain techniques were effective in the classroom, causing them to be more conscious and intentional about their teaching practices. In some instances, teachers described changes they made in their teaching as a result of these cognitive shifts either increasing the frequency with which they used certain techniques or rearranging their priorities about what was important to address in the classroom. However, others described being "more aware" and understanding why they should do things, but had not yet followed through with changes in their behavior.

So what is the value in changing teachers' thinking? In order to solve problems that arise in the classroom and generate new ideas about how to effectively teach children, one needs to understand *why* certain instructional practices are or are not effective with particular students. As stated earlier, experimenting with new practices and discovering what works leads to self-sustained change, for the changes in behavior are based on one's own observations of what works and what does not work (Franke et al, 1998). However, when teachers examine and reflect on their own thinking, this leads to *generative change* because teachers are able to continue to learn and grow due to their broader understanding of

why things work the way they do in the classroom (Franke et al., 1998). The SA Program provided participants with the knowledge to reflect on their own thinking about student learning, leading many participants to shift how they conceptualized students' learning needs and how they approached solving problems in the classroom. Because teachers increased their knowledge about learning differences, they developed a new framework with which to identify students' learning strengths and weaknesses and thus added to their repertoire of techniques to address their learning needs.

However, these changes in thinking took time. Participants were observed to become more proficient using the neurodevelopmental terminology and more efficient carrying out SA processes as the year progressed. Many participants described the "learning curve" involved in SA, indicating that the more they used it, the more confident they felt. However, for many participants, this confidence was only beginning to become apparent at the end of the school year, making continued implementation and collegial support critical in order for participants to implement the program to the fullest extent possible.

A New Model of Teacher Change

Based on the analysis of teacher change in the current study, I have proposed a new model of teacher change, which exemplifies how the professional development program examined this this study related to teachers' instructional practices, their beliefs about learning, and student outcomes.

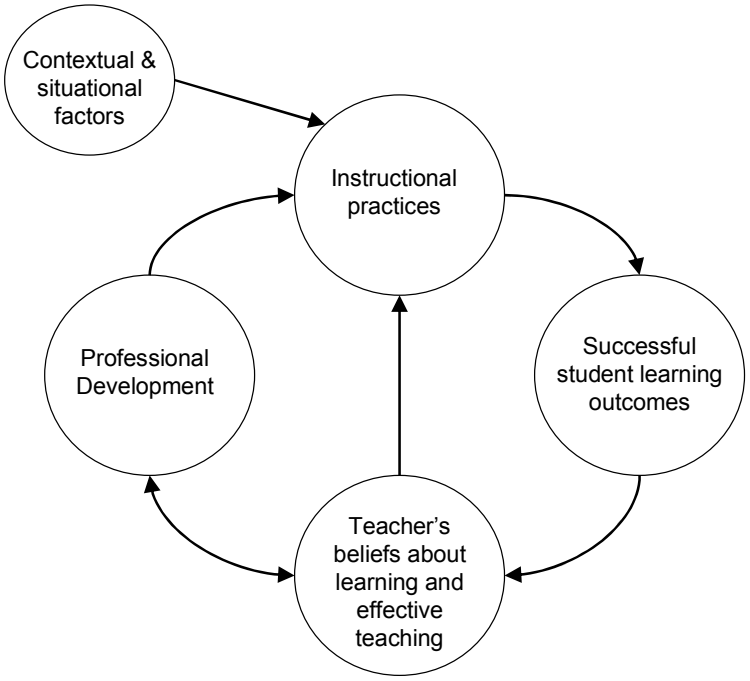


Figure 8. A new model of teacher change

Based on my new model, professional development programs may have a direct impact on instructional practices. Findings from the current study suggest that this occurs when teachers' beliefs and attitudes align with the new instructional practice, and when contextual and situational factors allow for the new practice to be implemented with relative ease. When these conditions are present, teachers are able to experiment with new practices, and as they observe successful student outcomes, these practices are integrated into their beliefs about effective teaching. Because this path is based on teachers' capacity to experiment with new practices and integrate them into her teaching repertoire, this would be considered *self-sustained change.*

However, professional development programs may directly impact teachers' beliefs about learning and effective teaching, causing them to view students and learning from a different perspective. While this process likely takes longer to implement, changes in instructional practices occur, not through experimentation, but through an understanding of why new techniques are important in student learning. Because this type of change is based on changed cognitions, teachers would ideally continue to grow

and adapt their instructional techniques in order to achieve successful student outcomes, making this path of educational change a type of *generative change* (Franke et al., 1998).

Limitations of the Study

The current study resulted in a large amount of data, ranging from information about participants' beliefs and attitudes about learning to the specific ways they implemented SA practices in their classrooms and school. Yet, as with any research study, several limitations impacted what conclusions could be drawn from these data. First, the study focused on one school with particular goals and contextual factors that impacted the ways the program was received and implemented. All schools have a unique climate and set of situational factors that would influence the impact of a professional development program on a teacher or school. While the analysis from this study provided a basis for understanding teacher change in response to a complex program, these principles should be tested and examined in other school settings as well.

In the current study, it was difficult to recruit non-SA participants in order to match individuals in the comparison group to SA participants based on grade level and years of teaching experience. The differences between individual characteristics in the two groups could have influenced some of the study's findings. Recruitment for non-SA participants took place in the middle of the school year, which may have contributed to participants' reluctance to participate due to their already busy workloads. Likewise, group differences due to participants' roles on the Assistance Team may have also impacted some findings. Although classroom teachers had rotating positions on the Assistance Team, teachers' exposure to group problem-solving every week may have influenced their problem-solving skills even without exposure to the SA Program.

Obtaining more information about participants' beliefs and instructional practices prior to their exposure to SA would have also been beneficial to fully understanding how these factors changed after participants took part in SA. However, logistical issues prevented this from occurring in the current study. Future studies would be strengthened by including more comprehensive interviews with participants before they attended the SA Core Course. Likewise, other studies have had success examining conceptual change in educators by having them construct concept maps at various time points (Trent et al., 1998); incorporating the concept mapping exercise into pre-SA data collection procedures and having

them complete the exercise again at the end of the school year would likely yield more conclusive evidence of how SA impacted changes in participants' thinking. Collecting data from the comparison group at the beginning and end of the school year would also have been beneficial to understanding teacher growth and change over the course of a school year for participants who did not take part in the program under investigation.

Evidence from the current study suggested that implementation of the SA Program takes time, and one year was not long enough for most participants to integrate the various aspects of the program into their teaching repertoires. Several participants made references to how they would continue to build on their implementation in the future, incorporating more aspects of the program in the following school year or when more teachers in the school were trained in the SA model. Likewise, it would be interesting to examine the degree to which implementation was sustained after formal involvement of the SA Program ended and participants no longer had Practicum sessions to attend.

Finally, my position as both researcher and an employee of All Kinds of Minds may have influenced participants' responses, making them report more favorable opinions towards the SA Program. Understanding this risk, I was certain to introduce myself as a member of the research team and not directly associated with the SA Program itself.

Implications

Findings from the current study indicated several factors may be important to the success of professional development programs:

- Programs should be closely aligned with school and district goals. Participants in the current study cited on multiple occasions the importance of approaching SA implementation as a group with a specific emphasis on achieving goals laid out in the School Improvement Plan. Educators are faced with a multitude of tasks to accomplish each day, so aligning program activities with school-wide goals can help to ensure program activities remain a priority to teachers and administrators in the school.
- Program developers and facilitators should focus efforts on building on what participants already know and believe about student learning. Participants in the current study showed

the highest level of interest and implementation for practices that were aligned with their personal beliefs and experiences. Individuals delivering professional development programs would benefit from knowing their participants and understanding their beliefs and experiences in order to avoid misconceptions and make the strongest possible impact.

- Learning new practices and finding the time to integrate new strategies and techniques into one's teaching can be overwhelming. Findings from this study suggested that participants adapted more readily to practices that related to what they already did in the classroom. Helping participants make direct connections between what they are being asked to do and what they already do can help in increase congruence, thus increasing participants' likelihood of implementing the new practice.
- Approaching educational innovations as a school-wide effort likely has more potential for lasting outcomes than sending individual teachers or school staff to participate in programs on their own. This principle was found to be true in other studies (Klonsky, 2002; Morris, Chrispeels, & Burke, 2003), and is supported by findings from the current study. In particular, several participants noted that they would likely not have followed through on much of what they did with SA if it were not for the reminders and support of school colleagues.
- Collegial support is critical during the implementation of new instructional practices. Likewise, creating an opportunity for regular dialogue among colleagues during a time slot already set aside for group meetings would likely yield the best results. In the current study Assistance Team meetings and Practicum sessions provided these opportunities for collegial support, allowing participants to work through problem-solving scenarios as a group, share ideas regarding implementation, and practice using the new terminology and concepts with others who were learning the same material. However, administrative support was critical for allowing this to take place, as teachers required coverage for their classes and a supportive environment that values ongoing learning.
- In addition to collegial support, implementation support focused on helping participants gain the skills and confidence needed to implement new practices with fidelity is critical. Implementation support may focus on developing specific skills necessary to carry out

particular tasks, but should also provide participants with the opportunity to continue developing problem-solving skills that will encourage *generative change* and allow participants to continue growing and learning over time in order to provide the most effective instruction possible for students.

Concluding thoughts

Accomplishing change is complex, involving an array of external factors and internal factors that are often difficult to identify or influence. Huge amounts of information were collected as part of this study in order to gain a closer perspective on how changes occur in educational settings. This study focused on one school and one program, yet the findings have helped to break apart of the complexities associated with how teachers adapt their instruction in order to continually evolve to meet the needs of a diverse population of students. No single program is likely to be the "cure-all" to the educational system, but understanding how innovative professional development programs can affect the most influence in order to increase student development and learning is critical. As researchers, program developers, and educators develop a better understanding of *why* innovation programs work or not, we can embrace this *generative change* that provides a basis for ongoing growth and improvement.

APPENDIX A

Innovation Configuration Map for Schools Attuned Implementation

Innovation Configuration Map For Schools Attuned® Implementation

The Innovation Configuration (IC) Map for Schools Attuned Implementation was developed by the staff at All Kinds of Minds (AKOM) in a series of meetings held from April to August 2004. The meetings were facilitated by Pat Roy from the National Staff Development Council and Stacy Parker-Fisher from the Program Development team at AKOM. The IC Map is intended to outline the core components of the implementation of Schools Attuned for both the teacher and student. Each component has several variations that describe implementation on a continuum from ideal (far left) to unacceptable (far right). The variations to the left of the dashed line are acceptable levels of Schools Attuned implementation. There are 12 components for teachers and 7 components for students, with 2 of the student components focused specifically on students who have been attuned.

This draft of the IC Map represents the second step in a process of developing the final IC Map in which the comments from the SA facilitators and been reviewed and integrated into the document where appropriate. The next step involves field testing the map by interviewing teachers about the implementation of SA in their classrooms. The third and final step will be to develop a teacher self-report instrument based on the components of the IC Map and/or an observation guide for use in classrooms that are implementing SA.

The Teacher

1.0 The Teacher describes specific student learning behaviors using neurodevelopmental (ND) terminology.

Level One	Level Two	Level Three	Level Four	Level Five	Level Six
Uses ND terminology at the function and/ or component level to describe observations related to student learning.	Uses ND terminology at the construct level to describe observations related to student learning.	Describes observations related to student learning without applying neurodevelopmental (ND) terminology.	Does not describe observations related to student learning.	Uses only labels or generalizations to describe student learning behaviors ("lazy", "unmotivated", "slow", "smart").	

2.0 The Teacher uses the Attuning a Student (AAS) process and materials to support data-driven hypotheses about individual student learning.

Level One	Level Two	Level Three	Level Four	Level Five	Level Six
Consolidates information from the Views* and work samples to create a student ND profile. Uses ND profile to support hypotheses about student learning behaviors. Collaboratively (with student and/or parent) develops, implements and modifies a management plan communicated through a demystification process.	Consolidates information from the Views* and work samples to create a student ND profile. Uses ND profile to support hypotheses about student learning behaviors. Collaboratively (with student and/or parent) develops, implements and modifies a management plan .	Consolidates information from the Views* and work samples to create a student ND profile. Uses ND profile to support hypotheses about student learning behaviors.	Consolidates information from the Views* and work samples to support hypotheses about student learning behaviors	Does not use the AAS process or materials to support hypotheses about student learning.	

*Uses tools provided by Schools Attuned

3.1 The Teacher plans demystification sessions.

Level One	Level Two	Level Three	Level Four	Level Five	Level Six
Designs the message carefully by considering the characteristics of the student/parent/caregiver (e.g., ND profile, cultural, emotional, and familiarity with ND constructs) and self (e.g., formal vs. informal, verbal communication vs. props, talking vs. listening, accommodations). Considers strategies to check and reinforce the effectiveness of the communication.	Designs the message carefully by considering the characteristics of the student/parent/caregiver (e.g., ND profile, cultural, emotional, and familiarity with ND constructs) and self (e.g., formal vs. informal, verbal communication vs. props, talking vs. listening, accommodations).	Designs the message carefully by considering the characteristics of the student/parent/caregiver (e.g., ND profile, cultural, emotional, and familiarity with ND constructs).	Talks informally with a student about his/her learning but does not plan demystification.		

3.2 The Teacher demystifies students individually (one-on-one) over one or more sessions.

Level One	Level Two	Level Three	Level Four	Level Five	Level Six
Incorporates all the steps and themes of the demystification process to discuss learning with the student and parent/guardian/caregiver resulting in the formation of an alliance between all three parties.	Incorporates all the steps and themes of the demystification process to discuss learning with the student and parent/guardian/ caregiver.	Incorporates all the steps and themes of the demystification process to discuss learning with the student only.	Talks with a student about his/her learning without incorporating all the steps and themes of the demystification process.	Does not talk with student about his/her learning.	

4.1 The Teacher selects and/or adapts accommodations and interventions to enhance learning of all students, i.e., implementation breadth across the classroom.

Level One	Level Two	Level Three	Level Four	Level Five	Level Six
Selects and adapts accommodations and interventions for a majority of students in a classroom based on an understanding of the neurodevelop-mental (ND) framework.	selects and/or adapts accommodations and interventions for a sub-grouping of students who display similar weaknesses to address those weaknesses based on an understanding of the ND framework.	Selects and adapts accommodations and interventions for one or a few students based on an understanding of the ND framework.	Selects and adapts accommodations and interventions without considering the ND framework.	Does not select and adapt accommodations or interventions for students.	

4.2 The Teacher selects and/or adapts accommodations and interventions based on one or a few students' ND profiles, i.e., depth of implementation among one or a few students.

Level One	Level Two	Level Three	Level Four	Level Five	Level Six
Engages one or a few students in the design and implementation of specific accommodations and interventions to address observable learning behaviors based on the students' ND profiles (including strengths and affinities).	Designs and implements specific accommodations and interventions to address observable learning behaviors based on the students' ND profiles (including strengths and affinities).	Implements specific accommodations and interventions to address observable learning behaviors based on the students' ND profiles (including strengths and affinities).	Implements accommodations and interventions to address observable learning behaviors based on the students' weaknesses in their ND profiles.	Implements accommodations and interventions based on his/her hypothesis of learning difference and not data.	Uses no specific accommodations or interventions for students.

5.0 The Teacher differentiates instruction based on ND understanding of the curriculum.

Level One	Level Two	Level Three	Level Four	Level Five	Level Six
Differentiates instruction based on the ND demands of the curriculum and the ND strengths and weaknesses of students.	Differentiates instruction based on the ND demands of the curriculum.	Differentiates instruction without consideration of ND demands.	Does not differentiate instruction.		

6.0 The Teacher identifies opportunities for and engages students in activities to strengthen students' ND strengths.

Level One	Level Two	Level Three	Level Four	Level Five	Level Six
Engages in general conversations with groups of students regarding strengthening ND strengths. Identifies activities in which students could strengthen ND strengths. Provides on-going support for individual students to engage in identified, specific activities that strengthen ND strengths.	Engages in general conversations with groups of students regarding strengthening ND strengths. Identifies activities in which students could strengthen ND strengths.	Engages in general conversations with groups of students regarding strengthening ND strengths.	Does not consider student ND strengths.		

7.0 The Teacher uses a variety of indicators to measure academic progress of students that take into consideration students' ND profiles.

Level One	Level Two	Level Three	Level Four	Level Five	Level Six
Selects and/or designs multiple indicators of academic progress of students that take into consideration students' ND profiles and input.	Selects and/or designs multiple indicators of academic progress of students that take into consideration students' ND profiles	Selects and/or designs a few indicators of academic progress of students that take into consideration students' ND profiles.	Uses consistent, uniform assessment methods for all students with no variance for ND profiles of individual students.		

8.0 The Teacher engages students in "learning about learning" based on the ND framework.

Level One	Level Two	Level Three	Level Four	Level Five	Level Six
Embeds lessons about ND framework within academic tasks. Teaches freestanding lessons about ND framework. Uses "teachable moments" to share ND framework with students.	Teaches freestanding lessons about the broader ND framework. Uses "teachable moments" to share ND framework with students.	Uses "teachable moments" to share only ND terminology with students.	Does not talk with students about learning based on ND concepts.		

9.0 The Teacher creates a classroom climate that protects students from humiliation.

Level One	Level Two	Level Three	Level Four	Level Five	Level Six
Creates an awareness of the diversity of ND profiles and its impact on the behaviors of students and/or teachers resulting in a climate where each student feels safe and valued regardless of his/her ND profile. This climate is reinforced by explicit instruction around issues of social interaction that respect diverse ND profiles.	Creates an awareness of the diversity of ND profiles and its impact on the behaviors of students and/or teachers resulting in a climate where each student feels safe and valued regardless of his/her ND profile.	Creates an awareness of the diversity of ND profiles and its impact on the behaviors of students and/or teachers.	Does not attend to the connection between the diversity of ND profiles and issues of classroom climate.		

10.0 The Teacher involves parents/guardians/caregivers in understanding aspects of their child's ND profile.

Level One	Level Two	Level Three	Level Four	Level Five	Level Six
Engages parents in meetings/ events and other opportunities to learn about the ND framework. Shares information about ND demands of the curriculum. Gathers information from parents about aspects of their child's ND profile.	Shares information about ND demands of the curriculum. Gathers information from parents about aspects of their child's ND profile.	Gathers information from parents about aspects of their child's ND profile.	Does not communicate with parents about aspects of their child's ND profile.		

11.0 The Teacher collaborates* with colleagues in the implementation of Schools Attuned.

Level One	Level Two	Level Three	Level Four	Level Five	Level Six
Engages colleagues within the school site and reaches out to other resources (e.g., online, community, and curricular) within and beyond the school site to support implementation of the Schools Attuned program.	Initiates and responds to colleagues within the school site for implementation of the Schools Attuned program.	Responds to requests for collaboration initiated by school colleagues related to the Schools Attuned program.	Does not collaborate with colleagues regarding the Schools Attuned program.		

*** Collaborates: Engages a joint problem-solving process with all parties bringing expertise.**

12.0 The Teacher pursues ongoing professional learning opportunities related to a ND framework.

Level One	Level Two	Level Three	Level Four	Level Five	Level Six
Completes the Schools Attuned Program and engages in individual and group learning activities such as personal reflection on practice, reading books, using online resources including discussion groups and peer study groups, and viewing videos related to the ND framework.	Completes the Schools Attuned Program and engages in individual learning activities such as personal reflection on practice, reading books, using online resources, and viewing videos related to the ND framework.	Completes the Schools Attuned Program (Pre-Course, Core Course and Practicum.)	Completes the Schools Attuned Pre-Course and Core Course.	Completes the Schools Attuned Core Course.	

The Student

1.0 The Student demonstrates an awareness of his/her learning within a neurodevelopmental (ND) framework.

Level One	Level Two	Level Three	Level Four	Level Five	Level Six
Anticipates and plans for challenges based on understanding of his\her neurodevelopmental (ND) profile and the demands of academic and social tasks.	Reflects on his/her understanding of ND profile in relationship to completed academic and social tasks.	Identifies constructs (in ND language or comparable terms) in which he/she is strong or weak.	Identifies general areas of strengths and weaknesses of his/her own learning.	Is not aware of his/her learning profile.	

2.0 The Student engages in the learning process.

Level One	Level Two	Level Three	Level Four	Level Five	Level Six
Participates consistently in the learning process through verbal engagement and/or production of products in a variety of settings (i.e., small and large groups). Provides input in the design of learning opportunities. Engages in the learning process on multiple levels such as reflecting, intellectual risk-taking, and/or evaluating.	Participates consistently in the learning process through verbal engagement and/or production of products in a variety of settings (i.e., small and large groups). Provides input in the design of learning opportunities.	Participates consistently in the learning process through verbal engagement and/or production of products in a variety of settings (i.e., small and large groups).	Participates inconsistently in the learning process through verbal engagement and/or production of products.	Is disengaged from the learning process.	

3.0 The Student expresses optimism about self as a learner.

Level One	Level Two	Level Three	Level Four	Level Five	Level Six
Identifies areas of potential success in and/or out of school and is optimistic about achieving success.	Identifies areas of potential success in and/or out of school but is not optimistic about achieving success.	Is pessimistic or apathetic about his/her ability to succeed in school and life.			

4.0 The Student supports others' learning and success in school.

Level One	Level Two	Level Three	Level Four	Level Five	Level Six
Advocates for other students; modifies own behavior to support others.	Understands the need for and supports modifications for other students.	Understands the need for modifications for other students.	Does not accept modifications for other students.		

5.0 The Attuned Student participates in the management of his/her neurodevelopmental (ND) profile.

Level One	Level Two	Level Three	Level Four	Level Five	Level Six
Contributes to the implementation of his/her management plan; suggests and chooses appropriate accommodations and interventions that improve weaknesses and leverage strengths.	Agrees to and participates in the implementation of his/her management plan.	Agrees to the implementation of his/her management plan.	Acknowledges the need to manage his/her ND profile, but is reluctant or refuses/rejects the management plan.	Does not acknowledge the need to manage his/her ND profile.	

6.0 The Attuned Student initiates engagement with others regarding productive self-advocacy about his/her learning.

Level One	Level Two	Level Three	Level Four	Level Five	Level Six
Initiates engagement with teachers, peers, and parents or other adults significant to his/her learning process about his/her learning needs.	Initiates engagement with teachers and parents or other adults significant to their learning process about his/her learning needs.	Initiates engagement with teacher(s) about his/her learning needs.	Initiates engagement with one person other than a teacher about his/her learning needs.	Does not initiate engagement with others about his/her learning needs.	

APPENDIX B

Data Collection Timeline

	Summer 2005	Oct. 2005	Nov. 2005	Jan. 2006	Feb. 2006	Mar. 2006	Apr. 2006	May 2006	June 2006
Educator	Teacher Efficacy Questionnaire Teacher Problem-Solving Vignettes SA Core Course Evaluation			SA Educator interviews	Non-SA Educator interviews	Classroom Observations (SA teachers)		Educator interviews w/ vignettes SA Implementation Survey Classroom Observations (SA & non-SA)	Teacher Efficacy Questionnaire Classroom Observations (non-SA)
School	Principal Interview	Principal interview		Principal interview Observe Assistance Team meeting	Observe Assistance Team meeting	Observe Assistance Team meeting		Observe Assistance Team meeting	Principal interview Review school stats, growth plans
SA	SA Core Course	Observe Practicum 1	Observe Pract. 2	Practicum 3	Observe Practicum 4	Observe Practicum 5			

APPENDIX C

Educator Interview Guides

Schools Attuned Mid-Year Implementation Interview

Thanks again for agreeing to participate in this research study. As a reminder, everything we discuss during this interview will be confidential, although I will be tape recording our conversation so I can review it later. Is that ok? You are not obligated to answer any questions, and you're free to end this interview at any time.

Today, I'd like to learn more about your ideas about teaching and your involvement so far with the Schools Attuned Program. This interview is not meant to judge your performance as a teacher or your mastery of Schools Attuned – I simply want to know what it's like to use Schools Attuned in "real classrooms." I hope you'll feel free to be open and honest in your responses. Do you have any questions before we begin?

First of all, I want to get to know you a little better and learn some about your class this year.

1. You teach ___ grade, is that correct? (If participant is not a regular classroom teacher, ask her to explain her role.)
2. How many students do you have in your class?
3. How is the school year going? How is your class this year?
4. Do you have any other major roles in the school (e.g. assistance team)?
5. Have you participated in any other professional development programs recently, or are you using any special curriculum besides Schools Attuned?

Now I'm going to ask you to do something a little different. Are you familiar with concept maps or webs? Concept maps are basically graphical representations of ideas and how they relate to each other. Here are a couple of examples – this one is for cooking, and this is a concept map for biology (see attached images at the end of the interview protocol).

For the next 4 or 5 minutes, I'd like you to construct a concept map or web to describe your approach to teaching a diverse group of students. In other words, when you think about all the different students in your class, how do you go about working with them? What kinds of things do you do or think about? Obviously, there's no one way to do this. You can organize it in whatever way makes sense to you. What's important is that it reflects your current thinking about teaching diverse learners. Feel free to describe what you're doing as you do it.

[Have participant draw concept map. Ask clarification questions through the process, and then ask the following questions.]

6. [If not apparent during the previous dialogue] Could you walk me through your map - briefly describe how you constructed your concept map and which concepts are the most important to you?

7. What aspects of your map, if any, have been influenced by your participation in the Schools Attuned Program?

Now we're going to switch gears and talk more specifically about the Schools Attuned Program.

8. In general, what are your impressions of the program so far?

9. Have you been able to incorporate any aspects of the program in your classroom?

   9a. (If the participant is <u>not</u> a regular classroom teacher) What specific ways, if any, has Schools Attuned influenced your work or your interactions with students?

9b. How do you use Schools Attuned with individual students?

9c. How do you use Schools Attuned for your whole class?

9d. Does Schools Attuned influence how you interact with parents or other teachers?

10. What have been the most useful aspects of Schools Attuned for you?

11. What aspects of the program have been less useful to you?

12. Are there aspects of the program that you haven't implemented yet, but that you'd like to do?

13. What factors do you think have contributed to your ability to implement Schools Attuned?

14. What factors have been barriers to your implementation of Schools Attuned?

15. How does Schools Attuned fit in with your school's NCLB accountability plan, such as meeting benchmarks and end-of-grade testing?

16. Has participating in Schools Attuned influenced the ways you think about students in your classroom? (If yes, how?)

17. Has participating in Schools Attuned changed the way you teach or how you manage your classroom? (If yes, how?)

18. Have you noticed any differences in your students as a result of your participation in Schools Attuned? (If yes, what types of changes?)

19. Have you been able to attune any students this year? [If yes] Where are you currently in that process?

The next few questions will focus on the student(s) you selected to attune this year.

20a. What is the student's primary problem in school?

20b. What strategies have you tried with this student?

20c. Is there anything else you plan on trying?

20d. How will you know if the student is improving?

20e. How has Schools Attuned influenced how you work with this student?

20f. How confident do you feel that you'll be able to help this student?

20g. Is this student receiving Exceptional Children's services? Have you referred this student to the Assistance Team?

(If participant has attuned more than one student, repeat questions in #20 for each student.)

21. Have you used any part of the Attuning a Student process with other students in your class who haven't gone though the full attuning process?

22. If I were come into your classroom to see Schools Attuned in action, what could I expect to see?

22. Is there anything else you'd like to share about your participation in the Schools Attuned Program?

Schools Attuned End-of-Year Interview

Great to see you again. As a reminder, everything we discuss during this interview will be confidential, although I'll be recording our conversation so I can review it later. You are not obligated to answer any questions, and you're free to end this interview at any time.

Today I'm going to ask you a few more questions about your use of Schools Attuned, as well as how you work with kids with learning problems in general. Do you have any questions before we begin?

Vignettes

First, I'd like to discuss three short vignettes about students with learning difficulties. These are the same vignettes you saw last summer when we did a phone interview. Please take a moment to read the first vignette. Then I have a few questions for you. This is not a test, and there are no right or wrong answers. I'd just like to get a sense of how you'd respond to each student if he or she were in your classroom.

[Give participant time to review each vignette and ask the following questions.]

1. How would you begin to work with *Student*?
2. What other information would you want to know about this student?
3. What would you say the main problem is for *Student*?
4. What strategies would you use to help *Student*?
5. How would you know if these strategies were working?
6. How successful do you think you'd be in helping *Student?*

Concept Maps

[Pull out participant's concept map.] Last time we met, you drew this concept map to describe how you address the diverse learning needs of students in your classroom.

7. Now that it's been a few months, is there anything you would change or add to your map?
8. What aspects of your map, if any, have been influenced by your participation in the Schools Attuned Program?

Implementation

Now I'd like to talk with you more specifically about the Schools Attuned Program. Did you have a chance to complete the questionnaire I sent you?

[When survey is complete, ask about higher items endorsed by participant.]

9. Have you noticed any differences in your students as a result of your participation in Schools Attuned? (If yes, what types of changes?)
10. How has Schools Attuned impacted how you think about students?
11. What factors do you think have contributed to your ability to implement Schools Attuned?
12. What factors have been barriers to your implementation of Schools Attuned?
13. Do you see Schools Attuned as fitting in with your overall school goals?

Attuned Students

Last time we met, you told me about the student you're attuning [give short description].

14. Could you tell me about how that student's doing now?
15. How has Schools Attuned influenced how you work with this student?
16. Have you been able to attune other students this year?
17. Have you used any part of the Attuning a Student process with other students in your class who haven't gone though the full attuning process?

Other

18. Do you plan on doing anything differently next school year as a result of your Schools Attuned training?
19. [For assistance team members; Non-assistance team members – ask if they referred a student to the team this year] How do you think the Schools Attuned model has worked in your assistance team this year?
20. As a [teacher], what do you think is the overall value of participating in Schools Attuned?
21. Is there anything else you'd like to share about your participation in the Schools Attuned Program?

Educator Interview (non-SA) – Jan. 2006

Thanks again for agreeing to participate in this research study. As a reminder, everything we discuss during this interview will be confidential, although I will be recording our conversation so I can review it later. Is that ok? You are not obligated to answer any questions, and you're free to end this interview at any time.

Today, I'd like to learn more about your ideas about teaching and how you work with students who are having difficulty in school. This interview is not meant to judge your performance as a teacher, but is about how teachers in general work with children with diverse learning needs. I hope you'll feel free to be open and honest in your responses. Do you have any questions before we begin?

I. First of all, I want to get to know you a little better and learn some about your class this year.

1. You teach ___ grade, is that correct? (If participant is not a regular classroom teacher, ask her to explain her role.)
2. How many students do you have in your class?
3. How is the school year going? How is your class this year?
4. Do you have any other major roles in the school (e.g. assistance team)?
5. Have you recently participated in any professional development programs or are you using any special curriculum?

II. Now I'm going to ask you to do something a little different.

Are you familiar with concept maps or webs? Concept maps are basically graphical representations of ideas and how they relate to each other. Here are a couple of examples – this one is for cooking, and this is a concept map for biology.

For the next 4 or 5 minutes, I'd like you to construct a concept map or web to describe your approach to teaching a diverse group of students. In other words, when you think about all the different students in your class, how do you go about working with them? What kinds of things do you do or think about? Obviously, there's no one way to do this. You can organize it whatever way makes sense to you and include any terms or concepts that seem relevant. What's important is that if reflects your current thinking about teaching diverse learners. Feel free to describe what you're doing as you do it.

[Have participant draw concept map. Ask clarification questions through the process, and then ask the following questions.]

8. [If not apparent during the previous dialogue] Could you walk me through your map - briefly describe how you constructed your concept map and which concepts are the most important to you?
9. What factors have influenced the various components of your map?

III. Struggling Students

8. Is there any particular student in your class this year who is struggling academically?
    8a. What is this student's primary problem in school?
    8b. What types of things have to tried with this student to help him succeed?
    8c. Is there anything else you're planning to do at this point?
    8d. How will you know if the student is improving?
    8e. How confident do you feel that you'll be able to help this student?
    8f. Has any particular program or educational activity influenced the way you work with this student?
    8g. Is this student receiving Exceptional Children's service? Has the student been referred to the Assistance Team?

IV. I just have a few more questions for you.

9. Have you heard of the Schools Attuned Program?
10. What are your impressions of the program, based on what you know.
11. Have you referred a student to the Assistance Team since they adopted a Schools Attuned process? Could you describe how that process worked?

Great! Those are all the questions I have for you. Do you have any other comments you'd like to make?

Educator End-of-Year Interview (Non-SA)

Great to see you again. As a reminder, everything we discuss during this interview will be confidential, although I'll be recording our conversation so I can review it later. You are not obligated to answer any questions, and you're free to end this interview at any time.

Today I'm going to ask you a few questions about your how you work with kids with learning problems.

Vignettes

First, I'd like to discuss three short vignettes about students with learning difficulties.

Please take a moment to read the first vignette. Then I have a few questions for you. This is not a test, and there are no right or wrong answers. I'd just like to get a sense of how you'd respond to each student if he or she were in your classroom.

[Give participant time to review each vignette and ask the following questions.]

1. How would you begin to work with *Student*?
2. What other information would you want to know about this student?
3. What would you say the main problem is for *Student*?
4. What strategies would you use to help *Student*?
5. How would you know if these strategies were working?
6. How successful do you think you'd be in helping *Student?*

Concept Maps

[Pull out participant's concept map.] Last time we met, you drew this concept map to describe how you address the diverse learning needs of students in your classroom.

7. Now that it's been a few months, is there anything you would change or add to your map?

Struggling Students

Last time we met, you told me about a student in your class who's struggling with learning [give short description].

8. Could you tell me about how that student's doing now?

Other

9. Have you referred students to the assistance team this year? Tell me about what your experience with the team has been this year.
10. Based on your experience, what are the pros and cons or using the Schools Attuned model in the assistance team?
11. Has your experience with the assistance team this year influenced how you think about or work with other students in your class?

APPENDIX D

Teacher Problem-Solving Vignettes

Teacher Problem-Solving Vignettes

I'm going to ask you some questions about the students described in these vignettes. There are no right or wrong answers to these questions; there are likely as many answers as there are teachers. I am just interested in learning about your approach to problems and teaching style. Your responses will be recorded so that I can review our conversation at a later date, but all your responses are confidential.

1. Kelly is a 2nd grader who is experiencing some difficulties in the classroom. She has trouble sitting still and frequently interrupts during class lessons and reading time. She has a great deal of energy, but she rarely finishes her assignments on time. You have to constantly remind her to stay on task. She is very friendly towards other children, but her classmates are beginning to be put off by her immaturity and constant chatter.

2. Jacob is a 9 year old boy who is completing 3rd grade and experiencing academic and behavioral difficulties in school. Although he had no problems acquiring basic skills in reading, spelling, and arithmetic, he has recently experienced some difficulties with word problems. As his teacher, you are concerned about his reading, although he is able to decode words accurately and automatically. School is becoming increasingly frustrating for Jacob.

3. Chelsea, a 4th grader, has always been a good student and is well-liked by her peers. However, you have noticed that she has a lot of trouble doing long division. You've worked with her after school and she has shown some improvement, but on tests she just seems get stumped. Also, when she is working independently in class, you frequently have to repeat directions for her. She will do the first step, but then she forgets what to do next. You've wondered if she has an attention problem, but she seems very focused once she gets going.

<u>Interview Questions for each vignette:</u>

How would you begin to work with *Student*?

What other information would you want to know about this student?

What would you say the main problem is for *Student*?

What strategies would you use to help *Student*?

How would you know if these strategies were working?

How successful do you think you'd be in helping *Student?*

APPENDIX E

Participant Responses on the *SA Implementation Survey*

Implementation Survey

Note: Because this survey was a working draft, frequency data should be interpreted with caution.
Numbers indicate the total number of participants who endorsed each rating (n=9)
**Indicates an item that was omitted from the analysis (see Figure 5)

When working with a student who struggles with one or more aspects of learning,	No. participants who endorsed each item			
	Very Typical	Typical	Somewh at Typical	Not Typical
a) I use the neurodevelopmental (ND) framework to think about the student's learning. (Note: Interview data indicated that this item was interpreted differently by different participants.)	1	3	3	2
b) I notice the student's strengths and weaknesses in terms of specific, observable behaviors.	4	5	0	0
c) I identify the ND demands of task(s) the student struggles with.	1	5	2	1
d) I use the ND framework to analyze the student's work samples.	1	3	3	2
e) **I seek input from other teachers about the student's struggles.	3	6	0	0
f) **I seek input from parents about the student's struggles.	2	6	1	0
g) **I seek input from the student about his or her struggles.	3	6	0	0
h) I consolidate information from a variety of sources to identify the student's ND strengths and weaknesses.	2	3	3	1
i) I use the SA Management Resources Binder to identify strategies to help the student.	1	5	3	0
j) I talk with the student about his/her strengths, weaknesses and how they affect school performance.	1	6	2	0
k) I collaborate with the student when developing strategies to improve his/her school performance.	1	4	4	0
l) I implement strategies that target the student's ND weaknesses.	1	4	3	1
m) I provide specific opportunities for the student to develop ND strengths.	1	5	2	1

n)	I implement strategies that leverage the student's affinities.	0	6	3	0
o)	I use teachable moments to reinforce key ideas about the student's ND strengths, weaknesses, and affinities.	2	4	3	0
p)	**I monitor the success of strategies I implement.	4	3	2	0

When working with a student who struggles with one or more aspects of learning,		Very Typical	Typical	Somewh at Typical	Not Typical
q)	**I encourage the student to use strategies independently to promote ongoing school success.	2	4	3	0
r)	I use the ND framework to communicate with colleagues about the student's learning.	1	3	3	2
s)	**I consider the characteristics (e.g., cultural; linguistic; developmental, etc.) of the student and/or parent when communicating about learning issues.	4	4	1	0
t)	I provide parents with resources or home-based strategies based on the ND framework.	0	2	3	3

When teaching the whole class,		Very Typical	Typical	Somewh at Typical	Not Typical
a)	I observe the learning of all the students in my class using the neurodevelopmental (ND) framework.	1	3	1	4
b)	I use strategies (based on the ND framework) that have the potential to benefit all students.	2	6	1	0
c)	I identify the ND demands of the curriculum.	1	3	2	2
d)	I adapt my instruction based on the ND demands of the curriculum.	1	1	4	2
e)	I offer all students options for completing assignments based on their ND strengths, weaknesses, and affinities.	2	2	3	1
f)	I present lessons in a variety of ways based on an understanding of students' ND strengths, weaknesses, and affinities.	2	6	1	0
g)	I develop and/or adapt classroom assessments based on students' ND strengths and weaknesses.	0	4	4	0
h)	I develop and/or adapt classroom assessments based on the ND demands of curriculum.	0	4	3	1

i) I promote students' acceptance of others' ND strengths and weaknesses to create a safe classroom climate.	2	4	1	2
j) I teach freestanding lessons about how students learn using the ND framework.	0	0	3	6
k) I embed lessons about the ND framework (or learning about learning) within academic tasks.	0	0	4	5
l) I provide parents of students in my class with resources and opportunities to learn about Schools Attuned concepts and strategies.	0	0	3	5

Schools Attuned Within the School – Please rate your agreement with the following statements:	Strongly Agree	Agree	Disagree	Strongly Disagree
a) The principal is committed to the success of SA at my school.	4	5	0	0
b) The principal is knowledgeable about and involved with SA at my school.	4	5	0	0
c) There is someone at my school whom I can go to for help with problems or feedback on my use of SA.	3	5	1	0
d) The district is committed to the success of SA at my school.	0	1	2	1
e) Our school schedule allocates enough time to support use of SA.	0	3	5	1
f) I have time available to plan and reflect upon my SA practice.	0	3	5	1
g) I have access to sufficient materials to implement SA.	3	6	0	0
h) There are other requirements in my school or district that make it hard to implement SA.	2	4	3	0
i) SA fits well with the educational goals and mission of my school.	1	8	0	0
j) SA fits well with other school improvement efforts at my school.	1	8	0	0
k) SA is aligned with the curriculum at my school.	1	7	1	0
l) I work with other teachers who are trained in SA.	2	5	2	0
m) My knowledge of SA has made me a valuable resource to other teachers/colleagues at my school.	1	7	1	0

n)	SA has a positive impact on the learning climate of my school.	0	6	2	0
o)	SA places a burden on my school's resources.	0	3	5	0
p)	I use SA online resources to support my implementation.	0	5	4	0
q)	There is someone at my school who coordinates SA activities.	1	4	3	1

APPENDIX F

Teacher Belief Questionnaire

Teacher Belief Questionnaire

How much can you do?

Directions: This questionnaire is designed to help us gain a better understanding of the kinds of things that create difficulties for teachers in their school activities. Please circle the number that indicates your opinion about each of the statements below. Your answers are confidential.

	Nothing	Very Little	Some influence	Quite a bit	A great deal
1. How much can you do to get through to the most difficult students?					
2. How much can you do to help your students think critically?					
3. How much can you do to control disruptive behavior in the classroom?					
4. How much can you do to motivate students who show low interest in school work?					
5. To what extent can you make your expectations clear about student behavior?					
6. How much can you do to get students to believe they can do well in school work?					
7. How well can you respond to difficult questions from your students?					
8. How well can you establish routines to keep activities running smoothly?					
9. How much can you do to help your students value learning?					
10. How much can you gauge student comprehension of what you have taught?					
11. To what extent can you craft good questions for your students?					
12. How much can you do to foster student creativity?					
13. How much can you do to get children to follow classroom rules?					
14. How much can you do to improve the understanding of a student who is failing?					
15. How much can you do to calm a student who is disruptive or noisy?					
16. How well can you establish a classroom management system with each group of students?					
17. How much can you do to adjust your lessons to the proper level for individual students?					
18. How much can you use a variety of assessment strategies?					
19. How well can you keep a few problem students form ruining an entire lesson?					
20. To what extent can you provide an alternative explanation or example when students are confused?					
21. How well can you respond to defiant students?					
22. How much can you assist families in helping their children do well in school?					
23. How well can you implement alternative strategies in your classroom?					
24. How well can you provide appropriate challenges for very capable students?					

APPENDIX G

Codes for Classroom Observations

Code	Code Name	Examples	Code	Code Name	Examples
P	Teacher presentation	Lecture, demo, explanation of content	WT	Waiting time	Student waiting on teacher
R/D	Recitation/Discussion	Practice skills, review previously covered content	IS	Individual Seatwork	Student doing seatwork independently
D	Directions	Directions for assignments	IC	Individual Computer	Content-centered work
GI	Small-group instruction	T working with 2+ ST on content	GS	Pairs/Group Seatwork	2+ students doing seatwork together
TE	Tests	Students working independently on asmt	GC	Pairs/Group Computer	2+ students on the computer together
CH	Checking	T & ST checking work in class; not review	WR	Writing	Sustained writing or composition
PR	Procedures & Rules	Reviews or gives extensive feedback on rules, procedures, and ST behavior	R	Reading	Sustained reading
AD	Admin. Routines	Attendance, announcements, pass out graded papers, discuss grades	HO	Hands-on learning	Using manipulatives to enhance learning
TR	Transitions	Changing activities, waiting for quiet	IQ	Independent inquiry	Conducting research for unique project
NA	Nonacademic Activity	Games, Non-acad. discussions, TV	SQ	Student-initiated questions	Higher order Qs for T from ST
DIS	Discipline	Discipline for misbehavior	SP	Student presentations	
PS	Praising Class	Praise for 1+ students			
MN	Monitoring	Providing feedback on individuals or groups	T	Teacher	
NO	Not occupied	Not engaged in academic or non-acad activity	A	Assistant	
OT	Off task	T in non-acad activity & ST off-task	ST	Student	
OR	Out of room	T out of the room	WC	Whole Class	
II	Individual Instruction	T works ind with ST on content material	SG(#)	Small Group	
IF	Individual feedback	T gives ST feedback on performance or beh			

APPENDIX H

Schools Attuned Program Evaluation Surveys

Schools Attuned Core Course Survey

Schools Attuned Participant:

Please write in your AKOM Member ID: z-_____
(This is for our data tracking only; all survey responses are strictly confidential.)

Your feedback is very important. Please answer the following questions by filling in the corresponding circles:

1. Please rate your level of agreement with the following statements: My experience in this Core Course will support my ability to…	Strongly Disagree 1	Disagree 2	Agree 3	Strongly Agree 4
a. Understand differences in learning	O	O	O	O
b. Identify students' strengths and areas in need of improvement	O	O	O	O
c. Develop management strategies to enhance the learning of students	O	O	O	O
d. Help students understand their own learning	O	O	O	O
e. Infuse optimism in students regarding their ability to learn	O	O	O	O
f. Make instructional decisions based on a neurodevelopmental knowledge of my curriculum and students	O	O	O	O
g. Create a climate that protects students from humiliation	O	O	O	O
h. Communicate with parents about their child's learning	O	O	O	O
i. Collaborate with colleagues about students' learning	O	O	O	O
j. Other: _____	O	O	O	O

2. Please rate how likely you will be to…	Not at all likely 1	Somewhat likely 2	Very likely 3	Extremely likely 4
a. Use what you have learned in the Core Course in your work	O	O	O	O

b. Recommend this Core Course to your colleagues	O	O	O	O
3. Please rate the usefulness of the following Core Course components:	Poor 1	Fair 2	Good 3	Excellent 4
a. Preparation Packet	O	O	O	O
b. Participant Syllabus	O	O	O	O
c. Management Resources Binder	O	O	O	O
d. Presented materials (e.g., overheads, PowerPoint)	O	O	O	O
4. Please rate the quality of Core Course Logistics (e.g., location, food)	O	O	O	O
5. Please rate the overall skill of Core Course facilitator(s)	O	O	O	O
6. Please rate the overall quality of Core Course	O	O	O	O

7. Which best describes your reason for participating in the Schools Attuned Program?

O It was required by my principal or other administrator.

O It was suggested by my principal or other administrator.

O It was recommended by a colleague.

O It was my idea to attend.

O Other: _____

8. Do you have any additional comments about this Core Course?

Thank you for providing this feedback!

Schools Attuned Practicum Participant Survey

Schools Attuned Participant,

The purpose of this survey is to elicit feedback on the usefulness and quality of the Schools Attuned Practicum. Please provide as much information as you feel is necessary to help us provide a quality program. Thank you.

Please write in your AKOM Member ID: z-_____
We use this randomly assigned number only to track our surveys and understand who benefits from our programs; all responses are confidential.

1. Please rate the added value of Practicum to the Core Course for your total experience in the Schools Attuned program.

   O No Added Value
   O Minimal Added Value
   O Moderate Added Value
   O Significant Added Value

Explanation of rating:

2. Please rate how significantly your teaching/work will change as a result of Practicum.

   O No Change
   O Some Change
   O Moderate Change
   O Significant Change

Explanation of rating:

3. Please rate the quality of the structure of Practicum sessions (e.g., grouping, number of sessions, spacing of sessions).

O Poor
O Adequate
O Good
O Excellent

Explanation of rating:

4. Please rate the quality of the facilitation provided during Practicum sessions (e.g., facilitators' abilities to manage the event, work with groups and individuals, present content and activities and conduct themselves professionally).

O Poor
O Adequate
O Good
O Excellent

Explanation of rating:

5. Do you feel that your Practicum experience helped you develop greater facility in the use of the Views, Consolidation forms, and Summary forms?

O Yes
O No

Explanation of rating:

6. **Please use the following scale to indicate the degree of positive impact each of the following aspects of Practicum has had on your teaching/work:**

	No Positive Impact	Some Positive Impact	Moderate Positive Impact	Significant Positive Impact
a. Attuning a second student *Explanation of rating:*	O	O	O	O
b. Participating in a learning community *Explanation of rating:*	O	O	O	O
c. Developing a learning about learning module *Explanation of rating:*	O	O	O	O
d. Research in the Management Resources Binder *Explanation of rating:*	O	O	O	O
e. Research in the All Kinds of Minds online resources *Explanation of rating:*	O	O	O	O
f. Research in the LearningBase *Explanation of rating:*	O	O	O	O
g. Neurodevelopmental aspects of reading *Explanation of rating:*	O	O	O	O

	No Positive Impact	Some Positive Impact	Moderate Positive Impact	Significant Positive Impact
h. Management plan for students with reading problems *Explanation of rating:*	O	O	O	O
i. Neurodevelopmental aspects of writing *Explanation of rating:*	O	O	O	O
j. Management plan for students with writing problems *Explanation of rating:*	O	O	O	O
k. Intervention Templates *Explanation of rating:*	O	O	O	O
l. Discussion of Practicum Portfolio *Explanation of rating:*	O	O	O	O

7. Throughout your Schools Attuned program, have you utilized additional resources outside of Practicum sessions (e.g., internet or email communications, phone check-ins with facilitators, peer study groups, etc.)?

O Yes O No

If so, what have they been, and of what value have they been to you?

Thank You for Completing this Survey!
Please feel free to use the back of this page for any additional comments.

APPENDIX I

Informed Consent Forms

University of North Carolina-Chapel Hill
Consent to Participate in a Research Study
Educators – Schools Attuned Participants
Social Behavioral Form

IRB Study # CDL 05-003
Consent Form Version Date: November 2, 2005

Title of Study: Investigation of a School Attuned

Principal Investigator: Angie Dyson
UNC-Chapel Hill Department: All Kinds of Minds
UNC-Chapel Hill Phone number: 919-933-8082
Faculty Advisor: Leslie Babinski, Ph.D.
Study Contact telephone number: 919-933-8082, ext. 2195
Study Contact email: adyson@allkindsofminds.org

What is the purpose of this study?
The purpose of this research study is to learn about the ways the Schools Attuned Program impacts teachers and students at your school. Your school is participating in the Schools Attuned Program, and we are interested in learning about your classroom and the issues you face concerning students who have learning differences.

Details about this study are discussed below. It is important that you understand this information so that you can make an informed choice about being in this research study.

You will be given a copy of this consent form. You should ask the researchers named above any questions you have about this study at any time.

How many people will take part in this study?
If you decide to be in this study, you will be one of approximately 10 staff members in your school taking part in this research study, including classroom teachers, specialists (e.g., learning specialists, school counselors), and the school principal.

You are being asked to be in the study because you expressed interest in participating in the Schools Attuned Program. To join the study is voluntary. You may refuse to join, or you may withdraw your consent to be in the study, for any reason, without penalty.

How long will your part in this study last?
This study will last for one school year (2005-06).

What will happen if you take part in the study?
Ten educators will be selected to participate in the Schools Attuned Program in 2005. The Schools Attuned Program involves a 5-day Core Course with a minimum of 35 instructional hours. In

addition, the program includes at least 10 hours of follow-up throughout the school year (Practicum); follow-up hours are offered during a series of sessions scheduled after the school day.

In the middle of the school year, we will ask you to take part in an interview about how you have implemented the principles and strategies taught in the Schools Attuned Program. We will interview you again at the end of the school year about the Schools Attuned Program and how you have used the program to work with students in your class. Each interview will take about one hour. All interviews will be recorded so that the researcher can review them later.

As part of this study, we will ask that you allow a researcher to observe in your classroom three times during the year. Observations will be scheduled with you in advance. Each observation will be followed by a short, informal conversation between you and the researcher. If you do not teach in a classroom setting (i.e., if you only work with students on an individual basis), this part of the study may not apply to you.

If you participate in this study, we will also ask you to release information already collected by All Kinds of Minds and the Schools Attuned Program. This includes the satisfaction surveys completed at the end of the Core Course and Practicum, any *Attuning a Student* forms you complete as part of the Practicum, the *Teacher Belief Questionnaire* completed prior to the course, and data from your phone interview discussing hypothetical Student Vignettes, if applicable.

Finally, as part of this research study, we request that you allow us to review the goals set in your Individual Growth Plan from last year (2004-05) and this year (2005-06). This will help us understand the ways in which the Schools Attuned Program has influenced school policies and the expectations of school administrators.

For educators who are part of the Student Assistance Team:
In order to learn about the effects of the Schools Attuned Program on school processes, the researcher will observe up to four Assistance Team meetings throughout the school year. Sections of the team meetings will be recorded for the researcher to review later. If you are a member of the school's Student Assistance Team, discussions you have during team meetings may be recorded or observed by the researcher, but all discussions will be confidential.

What are the possible benefits from being in this study?
Research is designed to benefit society by gaining new knowledge. By participating in this study, you may benefit by increasing your knowledge and skills to understand how to identify and manage the diverse needs of the students in your classroom. Modifications in your teaching may also have a positive impact on the students in your classroom.

What are the possible risks or discomforts involved from being in this study?
This study does not involve any immediate and/or long-term physical, psychological, or social risks. However, some of the information collected will be sensitive in nature, as it reflects on your teaching abilities. Information you provide will not be shared with any administrators at your school or be used in performance evaluations by your employer; only group results will be reported.

How will your privacy be protected?
Participants will not be identified in any report or publication about this study. Any information you provide as part of this study will be coded with a unique identification number. This identification number will be entered into an electronic database in order to keep track of your data each time you complete a form.

All phone and in-person interviews will be recorded using a digital recording device. Audio files will be stored in a secure folder. Consent forms, questionnaires, and interview and observation notes will be kept in a locked cabinet by the research team for the duration of the study. If you participate in interviews with this study, we will not use your name in any way. We may use a quote from your interview, but any identifying information will removed. Please note that if you are a school staff member who is not a classroom teacher (e.g., principal, learning specialist), your identity may be deduced by others associated with your school because of the few number of people who hold your position.

Although every effort will be made to keep research records private, there may be times when federal or state law requires the disclosure of such records, including personal information. This is very unlikely, but if disclosure is ever required, UNC-Chapel Hill will take steps allowable by law to protect the privacy of personal information.

Will you receive anything for being in this study?
Each school staff member who participates in this study will receive a $50 stipend to thank you for the time involved in completing questionnaires and interviews. This stipend will be distributed to participants at the end of the 2005-06 school year.

Will it cost you anything to be in this study?
The only cost associated with this study is the time it takes to complete the questionnaires and interviews.

What if you have questions about this study?
You have the right to ask, and have answered, any questions you may have about this research. If you have questions, or concerns, you should contact the researchers listed on the first page of this form.

What if you have questions about your rights as a research participant?
All research on human volunteers is reviewed by a committee that works to protect your rights and welfare. If you have questions or concerns about your rights as a research subject you may contact, anonymously if you wish, the Institutional Review Board at 919-966-3113 or by email to IRB_subjects@unc.edu.

- -

Participant's Agreement:

Please check one:

☐ I agree to participate in this research (i.e., complete the questionnaires and take part in interviews and observations as mentioned above).

☐ I do not agree to participate in this research.

Please check one:

☐ I give the researchers permission to access my information collected by All Kinds of Minds and the Schools Attuned Program (i.e., surveys, Attuning a Student data, phone interview data).

☐ I do not give the researchers permission to access my information collected by All Kinds of Minds and the Schools Attuned Program.

I have read the information provided above. I have asked all the questions I have at this time.

_____ _____

Signature of Research Participant Date

_____

Printed Name of Research Participant

University of North Carolina-Chapel Hill
Consent to Participate in a Research Study
Educators – Classroom Teachers (non-SA)

Title of Study: Investigation of a School Attuned **IRB Study # CDL 05-003**
Consent Form Version Date: January 27, 2006

Principal Investigator and Study Contact: Angie Dyson, All Kinds of Minds
Study Contact Phone Number: 919-933-8082, ext. 2195 **Email:** adyson@email.unc.edu

Faculty Advisor: Leslie Babinski, Ph.D.

Dear Educator,

You are being asked to participate in a research study. The purpose of this research study is to learn about the impact of the Schools Attuned Program on teachers and students. You are being asked to be in the study because your school is participating in the Schools Attuned Program, and we would like to learn more about your classroom and the issues you face concerning students who have learning differences.

To join the study is voluntary. You may refuse to join, or you may withdraw your consent to be in the study, for any reason, without penalty.

Details about this study are discussed below. It is important that you understand this information so that you can make an informed choice about being in this research study. You will be given a copy of this consent form. You should ask the researchers named above any questions you have about this study at any time.

How many people will take part in this study?
If you decide to participate, you will be one of approximately 20 staff members in your school taking part in this research study, including classroom teachers, specialists (e.g., learning specialists, school counselors), and the school principal.

How long will your part in this study last?
This study will last for about six months. During the upcoming school semester (Spring 2006), we will be collecting information from educators at your school. Some information will be collected through questionnaires, while some will be gathered through one-on-one interviews and classroom observations.

What will happen if you take part in the study?
We will invite you to take part in two interviews during the school year; each interview will last about 45 minutes. These interviews will include questions about your classroom, your ideas about effective teaching, and how you work with students with learning difficulties. All interviews will be recorded so that the researcher can review them later; however,

information you discuss during the interviews is confidential. At the beginning and end of the spring semester, we will also ask you to fill out a 24-item questionnaire regarding your beliefs about your teaching. This questionnaire will take about 10 minutes to complete.

In addition to the interviews and questionnaire, the researcher may ask to observe in your classroom. Observations will be scheduled with you in advance.

For educators who are part of the Student Assistance Team:
In order to learn about the effects of the Schools Attuned Program on school processes, the researcher will observe up to four Assistance Team meetings throughout the school year. Sections of the team meetings will be recorded for the researcher to review later. If you participate in the school's Student Assistance Team, discussions you have during team meetings may be recorded or observed by the researcher, but all discussions will be confidential.

What are the possible benefits from being in this study?
Research is designed to benefit society by gaining new knowledge. Your participation in this study will help the developers of the Schools Attuned Program understand the issues teachers face in the classroom concerning students' learning differences; this knowledge will help them develop a program that will be useful and meaningful to teachers like you. You may not experience any personal benefits from being in this study.

What are the possible risks or discomforts involved from being in this study?
This study does not involve any immediate and/or long-term physical, psychological, or social risks. However, some of the information collected will be sensitive in nature, as it reflects on your teaching. Information you provide will not be shared with any administrators at your school or be used in performance evaluations by your employer; only group results will be reported.

How will your privacy be protected?
All phone and in-person interviews will be recorded using a digital recording device. Audio files will be stored in a secure folder. Consent forms, questionnaires, and interview and observation notes will be kept in a locked cabinet by the research team for the duration of the study. We may use a quote from your interview, but any identifying information will removed. Please note that if you are a school staff member who is not a classroom teacher (e.g., principal, learning specialist), your identity may be deduced by others associated with your school because of the few number of people who hold your position.

Any information you provide as part of this study will be coded with a unique identification number. This identification number will be entered into an electronic database in order to keep track of your data each time you complete a form.

You will not be identified in any report or publication about this study. Although every effort will be made to keep research records private, there may be times when federal or state law requires the disclosure of such records, including personal information. This is very

unlikely, but if disclosure is ever required, UNC-Chapel Hill will take steps allowable by law to protect the privacy of personal information.

Will you receive anything for being in this study?
Each school staff member who participates in this study will receive a $50 stipend to thank you for the time involved in completing questionnaires and interviews. This stipend will be distributed to participants at the end of the 2005-06 school year.

Will it cost you anything to be in this study?
The only cost associated with this study is the time it takes to complete the questionnaires and interviews.

What if you have questions about this study?
You have the right to ask, and have answered, any questions you may have about this research. If you have questions or concerns, you should contact the researchers listed on the first page of this form.

What if you have questions about your rights as a research participant?
All research on human volunteers is reviewed by a committee that works to protect your rights and welfare. If you have questions or concerns about your rights as a research subject you may contact, anonymously if you wish, the Institutional Review Board at 919-966-3113 or by email to IRB_subjects@unc.edu.

- -

Participant's Agreement:

Please check one:

☐ I agree to participate in this research (i.e., complete the questionnaires and take part in interviews and observations as mentioned above).

☐ I do not agree to participate in this research.

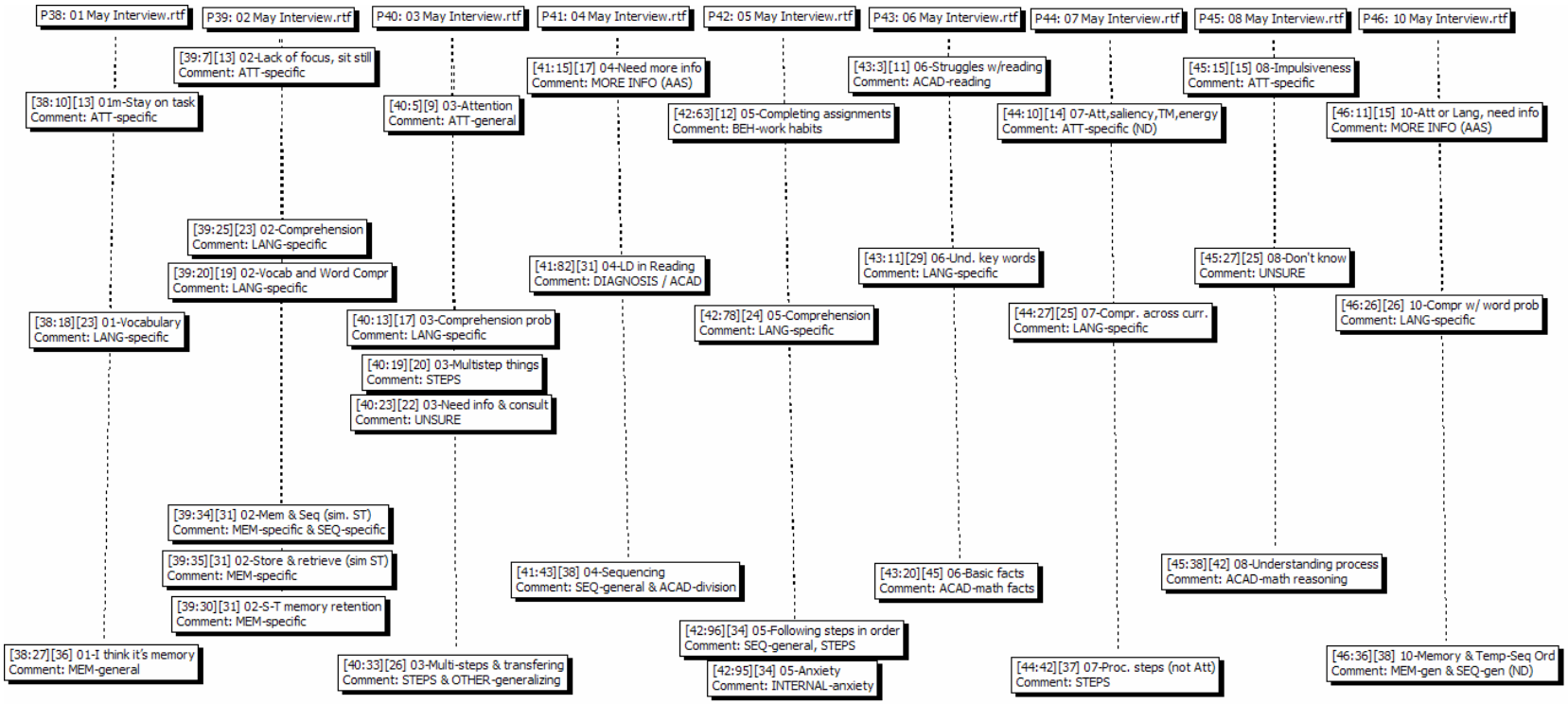
I have read the information provided above. I have asked all the questions I have at this time.

_____ _____
Signature of Research Participant Date

_____
Printed Name of Research Participant

APPENDIX J

Example of data analysis using Atlas.ti networking tool



APPENDIX K

Themes: Participants' SA Implementation

Table K1

Implementation with individual students in classrooms

Theme	No. of participants	Theme subcategories	No. of participants
1. Use strategies with students	9	a) New ideas for strategies from SA	3
			4
		b) Select strategies to target specific strengths and weaknesses	1
		c) Teach strategies for students to use independently	
2. Gather information to analyze student learning	5	a) Use of *SA Views* to gather information	4
		b) Gather and analyze student learning on specific tasks	3
3. Talk with student about learning	4		
5. Incorporate students' strengths in learning	4		
4. Talk with parents about student learning	3		
6. Incorporate into speech therapy	1		

Table K2

Implementation with the whole class

Theme	No. of participants	Theme subcategories	No. of participants
1. Use strategies class-wide strategies	7	a) Use strategies to benefit many students	7
		b) Other students catch on to strategies for individual students	2
		c) Use strategies to target class-wide weaknesses	2
2. Incorporation of strengths and affinities into class assignments or activities	7	a) Strengthen students' strengths and/or affinities	3
		b) Provide options for assignments based on students' affinities	3
		c) Develop centers based on students' affinities	1
		d) Use Affinities Survey with all students	1
3. Differentiation of instruction	3		
4. Use of strategic grouping strategies	2		
5. Teach students about learning	1		

APPENDIX L

Themes: Factors Impacting Implementation

Table L1

Factors facilitating implementation

Theme	No. of participants	Theme subcategories	No. of participants
1. The Assistance Team	6	a) Using SA on A-team	6
		b) Regular meetings	2
		c) Support from colleagues	3
		d) Hear and discuss strategies that can be used in participants' classrooms	3
2. Supportive environment	5	a) Administrative support	3
		b) Support from SA colleagues	2
		c) Supportive environment in general	2
3. School-wide focus	5	a) SA's fit with school goals and vision	3
		b) Consistent use of SA within school	2
4. Accessibility of SA resources	5	a) SA notebooks	3
		b) Practicum sessions	2
		c) SA online resources	2
5. Small class size	3		
6. Personal characteristics	2	a) Experience with evaluating students and working with parents	1
		b) Personal interest in program content	1
7. Observing student success	2	a) Success with a student	1
		b) Success on the Assistant Team	1
		c) Strategies easier to use than expected	1

Table L2

Implementation Barriers

Theme	No. of participants	Theme subcategories	No. of participants
1. Time	10	a) Need more time in general	5
		b) Attuning a Student process	6
		c) Competing responsibilities (e.g., literary assessments)	3
		d) Lengthier Assistance Team meetings	2
		e) Time consuming, but worth it	2
2. Paperwork	8	a) Paperwork is time consuming to complete	5
		b) Overwhelming and cumbersome	4
		c) High demands on teacher referring student to Assistance Team	2
3. Parent factors	4	a) Limited involvement in Attuning a Student and difficulty returning paperwork	2
		b) SA language difficult for parents to understand	2
4. Student factors	3	a) Not mature enough to have a conversation about their learning	2
		b) Not independent enough to strengthen strengths	1
5. School factors	3	a) High demands for Assistance Team members	2
		b) Challenge to involve non-SA staff	2
		c) Classroom factors (e.g, inclusion, short classes, no assistant)	2
		d) Focus on Assistance Team rather than classroom implementation	1
		e) Teachers not implementing strategies from Assistance Team	1

APPENDIX M

Themes: Changes in Thinking

Theme	No. of participants	Theme subcategories	No. of participants
1. Fuller understanding of students' learning	6	a) Increased understanding of students' learning and functioning in the classroom	4
		b) Increased understanding by gathering more information and seeing child from different perspectives	3
		c) Better understanding of how to serve students through regular and special education	1
2. Broader view of students	7	a) Look at students differently	3
		b) Consider the whole child	3
		c) Value student input more	3
3. Deeper understanding of ND constructs	8	a) Knowledge of specific constructs	5
		b) Use of SA constructs as a framework for looking at learning	5
4. Expanded view of students' problems	9	a) Think deeper about students' problems, consider more possibilities	9
		b) No longer assume problems are result of attention difficulties	6
		c) Less tendency to jump to conclusions about problems	4
5. Greater emphasis on strengths and affinities	6	a) Strengths	3
		b) Affinities	3
6. New conceptions about teaching	6	a) Reflecting on own teaching and decision-making in the classroom	4
		b) Being more aware	3
		c) Blending SA with previous knowledge and experience	2
		d) Adjust expectations for students	2
7. Increased intentionality in teaching	3	a) Understanding why they do things in the classroom	2
		b) More intentional in teaching	2

APPENDIX N

Teacher Problem-Solving Vignettes and Target Students: Problem Identification Trends

Table N1

Teacher Problem-Solving Vignettes: Problem Identification by Vignette

Context	Type of problem	Number (%) participants		
		Pre-SA n=7	Post-SA n=9	Non-SA n=7
Vignette 1	Attention - total	4 (57%)	5 (56%)	5 (71%)
	-General reference	2 (29%)	1 (11%)	2 (29%)
	-Specific aspect of attention	2 (29%)	4 (44%)	3 (43%)
	Academic (e.g., math)	0 (0%)	1 (11%)	0 (0%)
	Behavior (e.g., work habits)	3 (43%)	1 (11%)	0 (0%)
	Internal to student (e.g., maturity)	4 (57%)	0 (0%)	2 (29%)
	Specific diagnosis	0 (0%)	0 (0%)	1 (14%)
	Unsure/Need more info	0 (0%)	1 (11%)	0 (0%)
Vignette 2	Language – Specific aspects	1 (14%)	7 (78%)	5 (71%)
	Multi-step tasks	0 (0%)	1 (11%)	0 (0%)
	Academic	5 (71%)	1 (11%)	2 (29%)
	Specific diagnosis (e.g., LD)	0 (0%)	1 (11%)	0 (0%)
	Behavior			1 (14%)
	Internal to student (e.g., maturity)	2 (29%)	0 (0%)	1 (14%)
	General processing	1 (14%)	0 (0%)	0 (0%)
	Unsure/Need more information	0 (0%)	1 (11%)	1 (14%)
Vignette 3	Attention – general	1 (14%)	0 (0%)	0 (0%)
	Memory – total	1 (14%)	3 (33%)	1 (14%)
	-General reference	0 (0%)	2 (22%)	1 (14%)
	-Specific aspect of memory	1 (14%)	1 (11%)	0 (0%)
	Sequencing – total	0 (0%)	4 (44%)	0 (0%)
	-General reference	1* (14%)	3 (33%)	0 (0%)
	-Specific aspect of sequencing	0 (0%)	1 (11%)	0 (0%)
	Multi-step tasks	1 (14%)	3 (33%)	2 (29%)
	General processing	1 (14%)	0 (0%)	0 (0%)
	Academic area	1 (14%)	3 (33%)	2 (29%)
	Ability to generalize	0 (0%)	1 (11%)	0 (0%)
	Internal to student	3 (43%)	1 (11%)	6 (86%)

Table N2

Teacher Problem-Solving Vignettes: Problem Identification Across All Vignettes

Type of problem	Number (%) participants		
	Pre-SA n=7	Post-SA n=9	Non-SA N=7
ND Constructs – Total (Attention, Memory, Sequencing, Language)	7 (100%)	9 (100%)	7 (100%)
ND Constructs NOT attention	2 (29%)	8 (89%)	5 (71%)
Attention – total	5 (71%)	5 (56%)	5 (71%)
-General reference to attention	3 (43%)	1 (11%)	2 (29%)
-Specific aspect of attention	2 (29%)	4 (44%)	3 (43%)
Memory – total	0 (0%)	3 (33%)	1 (14%)
-General reference to memory	0 (0%)	2 (22%)	1 (14%)
-Specific aspect of memory	1 (14%)	1 (11%)	0 (0%)
Sequencing – total	1 (14%)	4 (44%)	0 (0%)
-General reference to sequencing	1 (14%)	3 (33%)	0 (0%)
-Specific aspect of sequencing	0 (0%)	1 (11%)	0 (0%)
Language – specific aspects	1 (14%)	7 (78%)	5 (71%)
Multi-step tasks	1 (14%)	3 (33%)	2 (29%)
Ability to generalize	0 (0%)	1 (11%)	0 (0%)
Behavior	3 (43%)	1 (11%)	2 (29%)
Specific academic area	6 (86%)	3 (33%)	2 (29%)
Specific diagnosis	0 (0%)	1 (11%)	1 (14%)
Internal to student (e.g., maturity)	6 (86%)	1 (11%)	4 (57%)
Unsure/Need more information	0 (0%)	2 (22%)	1 (14%)

Table N3

Target Student Descriptions (actual students): Problem Identification Trends

Type of problem	Number (%) participants	
	SA participants n=9	Non-SA participants n=7
ND Constructs: Total (Attention, Memory, Language, Sequencing, Higher Order, Motor)	9 (100%)	2 (29%)
Attention (general references)	2 (22%)	1 (14%)
Memory – total	3 (33%)	1 (14%)
-General reference to memory	1 (11%)	0 (0%)
-Specific aspect of memory	2 (22%)	1 (14%)
Language – total	3 (33%)	1 (14%)
-General reference to language	1 (11%)	0 (0%)
-Specific aspect of language	2 (22%)	1 (14%)
Sequencing	0 (0%)	1 (14%)
Higher Order Cognition	1 (11%)	0 (0%)
Gross Motor	1 (11%)	0 (0%)
Processing	2 (22%)	0 (0%)
Academic	7 (78%)	4 (57%)
-Specific aspect of reading	3 (33%)	2 (29%)
-Specific aspect of writing	3 (33%)	0 (0%)
-Specific aspect of math	1 (11%)	2 (29%)
Behavior	2 (22%)	1 (14%)
Internal to student (e.g., maturity)	3 (33%)	1 (14%)
Student's environment (e.g., home)	0 (0%)	2 (29%)
Unsure	1 (11%)	0 (0%)

APPENDIX O

Problem-solving Vignettes: Types of Additional Information Needed

Table O1

Teacher Problem-Solving Vignettes: Types of Additional Information by Vignette

Context	Type of information	Number (%) participants		
		Pre-SA n=7	Post-SA n=9	Non-SA n=7
Vignette 1	Info. about academic performance	4 (57%)	4 (44%)	0 (0%)
	-General academic performance	1 (14%)	3 (33%)	0 (0%)
	-Prior academic performance	3 (43%)	0 (0%)	0 (0%)
	-Work samples	0 (0%)	1 (11%)	0 (0%)
	Data from SA Views	0 (0%)	1 (11%)	0 (0%)
	Effective method for calming student	0 (0%)	0 (0%)	1 (14%)
	Information about student's behavior	1 (14%)	0 (0%)	1 (14%)
	Information about emotional functioning	1 (14%)	0 (0%)	0 (0%)
	Information about social functioning	1 (14%)	0 (0%)	0 (0%)
	-Specific area of functioning	0 (0%)	1 (11%)	0 (0%)
	Information from home	6 (86%)	8 (89%)	6 (86%)
	-General information on home life	6 (86%)	7 (78%)	4 (57%)
	-Input from parents on strategies	0 (0%)	1 (11%)	2 (29%)
	Input from colleagues	0 (0%)	2 (22%)	0 (0%)
	Input from student's previous teachers	1 (14%)	1 (11%)	1 (14%)
	Medical information	0 (0%)	2 (22%)	5 (71%)
	Parent rating scales	0 (0%)	1 (11%)	0 (0%)
	Previous evaluation information	1 (14%)	0 (0%)	2 (29%)
	Student input (e.g., motivators)	2 (29%)	2 (22%)	0 (0%)
	-Interests	2 (29%)	1 (11%)	0 (0%)
Vignette 2	Info. About academic performance	1 (14%)	8 (89%)	3 (43%)
	-General academic performance	0 (0%)	2 (22%)	1 (14%)
	-Info about specific academic area	1 (14%)	3 (33%)	1 (14%)
	-Prior academic performance	0 (0%)	3 (33%)	0 (0%)
	-Work samples	0 (0%)	0 (0%)	1 (14%)
	Assessments of student performance	0 (0%)	2 (22%)	3 (43%)
	Data from SA Views	0 (0%)	1 (11%)	0 (0%)
	Information about student's behavior	1 (14%)	3 (33%)	0 (0%)
	Information from home	1 (14%)	3 (33%)	5 (71%)
	Information on a specific area of functioning (e.g., memory)	1 (14%)	1 (11%)	0 (0%)

	Information on student's emotions	1 (14%)	2 (22%)	0 (0%)
	Information on social functioning	1 (14%)	0 (0%)	0 (0%)
	Input from colleagues	0 (0%)	0 (0%)	1 (14%)
	Input from student's previous teachers	0 (0%)	1 (11%)	4 (57%)
	Medical information	0 (0%)	0 (0%)	2 (29%)
	Student input (e.g., motivators)	3 (43%)	1 (11%)	0 (0%)
	-Interests	1 (14%)	0 (0%)	0 (0%)
Vignette 3	Info. About academic performance	3 (43%)	3 (33%)	1 (14%)
	-General academic performance	1 (14%)	1 (11%)	0 (0%)
	-Academic performance in specific area	2 (29%)	0 (0%)	0 (0%)
	-Prior academic performance	2 (29%)	2 (22%)	1 (14%)
	Data from SA Views	0 (0%)	1 (11%)	0 (0%)
	Information from home	3 (43%)	0 (0%)	3 (43%)
	Information on specific weak areas (e.g., memory)	3 (43%)	2 (22%)	0 (0%)
	Information on student's emotions	1 (14%)	0 (0%)	2 (29%)
	Input from student's previous teachers	1 (14%)	0 (0%)	1 (14%)
	Medical information (e.g., medications)	0 (0%)	0 (0%)	2 (29%)
	Student input	2 (29%)	3 (33%)	1 (14%)
	Absences	1 (14%)	0 (0%)	0 (0%)

Table O2

Teacher Problem-Solving Vignettes: Types of Additional Information Across All Vignettes

Type of information	Number (%) participants		
	Pre-SA n=7	Post-SA n=9	Non-SA N=7
Info. About academic performance	5 (71%)	7 (78%)	4 (57%)
-General academic performance	2 (29%)	4 (44%)	1 (14%)
-Info about a specific academic area	4 (57%)	3 (33%)	1 (14%)
-Prior academic performance	4 (57%)	3 (33%)	1 (14%)
-Work samples	0 (0%)	1 (11%)	1 (14%)
Assessment / Data collection			3 (43%)
-Assessments of student performance	0 (0%)	2 (22%)	3 (43%)
-Previous evaluation (e.g., psychological)	1 (14%)	0 (0%)	2 (29%)
-Data from SA Views	0 (0%)	3 (33%)	0 (0%)
-Parent rating scales	0 (0%)	1 (11%)	0 (0%)
Further information about student functioning	1 (14%)	4 (44%)	3 (43%)
-Student's behavior	1 (14%)	3 (44%)	2 (29%)
-Emotional functioning	2 (29%)	2 (22%)	2 (29%)
-Social functioning	1 (14%)	0 (0%)	0 (0%)
-Specific weak areas (e.g., memory)	3 (43%)	2 (22%)	0 (0%)
Information from home	6 (86%)	7 (78%)	6 (86%)
Medical information	0 (0%)	2 (22%)	6 (86%)
Information from colleagues	1 (14%)	4 (44%)	5 (71%)
-Input from colleagues (e.g., specialists)	0 (0%)	2 (22%)	1 (14%)
-Input from student's previous teachers	1 (14%)	2 (22%)	5 (71%)
Student input	5 (71%)	5 (56%)	1 (14%)
-Ask about student's interests	2 (29%)	1 (11%)	0 (0%)

APPENDIX P

Problem-solving Vignettes: Strategies Described by Participants

Group	Total no. of strategies	Average no. strategies (range)	% strategies accommo-dations	% of strategies utilizing strengths	No. of participants mentioning strengths
Pre-SA (n=7)	68	9.71 (6-12)	33.82%	0%	0*
Post-SA (n=9)	83	9.22 (4-15)	30.12%	10.84%	5
Non-SA (n=7)	60	8.57 (4-13)	18.33%	5.00%	2

*One participant incorporated affinities into strategy

APPENDIX Q

Problem-solving Vignettes: Monitoring Student Success

Area	Examples	Number (%) participants		
		Pre-SA n=7	Post-SA n=9	Non-SA n=7
Academic	Successful work completion, tests, grades, classroom performance, work samples	6 (86%)	8 (89%)	7 (100%)
Behavior	Behavior contracts, time on task, conduct log, improved behavior, fewer disruptions	5 (71%)	7 (78%)	5 (71%)
Emotional	Will observe less frustration, more confidence, less anxiety, better attitude	5 (71%)	3 (33%)	3 (43%)
Strategy	Evaluate strategies to see if they are working or successful	3 (43%)	5 (56%)	3 (43%)
Student independence	Observe students working and using strategies independently	1 (14%)	2 (22%)	3 (43%)
Changes noted by teacher	Giving students fewer reminders, review personal notes	2 (29%)	1 (11%)	3 (43%)
General observation of improvement	Observe improvement when working on-on-one, observe interactions in the classroom	2 (29%)	1 (11%)	1 (14%)

APPENDIX R

Participant Ratings on the *Teacher Belief Questionnaire*

Teacher Belief Questionnaire	Participant Responses					
	Pre-SA n=7		SA end-of-year n=8		Non-SA end-of-year n=7	
Item	M	SD	M	SD	M	SD
1. How much can you do to get through to the most difficult students?	7.43	.787	7.37	.916	6.71	.488
2. How much can you do to help your students think critically?	7.71	1.113	7.50	1.069	7.14	1.069
3. How much can you do to control disruptive behavior in the classroom?	7.86	.900	7.75	.886	7.29	1.113
4. How much can you do to motivate students who show low interest in school work?	6.71	.488	7.50	.756	6.14	.900
5. To what extent can you make your expectations clear about student behavior?	8.43	.787	8.50	.756	8.29	.756
6. How much can you do to get students to believe they can do well in school work?	7.71	.756	7.88	.835	7.71	1.254
7. How well can you respond to difficult questions from your students?	7.43	.976	7.63	.744	7.43	.976
8. How well can you establish routines to keep activities running smoothly?	8.43	.787	8.13	1.126	8.14	.900
9. How much can you do to help your students value learning?	7.43	.976	7.50	1.069	6.71	1.113
10. How much can you gauge student comprehension of what you have taught?	7.57	.976	8.13	.641	7.86	.690
11. To what extent can you craft good questions for your students?	7.86	.900	7.37	.926	7.86	1.069
12. How much can you do to foster student creativity?	6.29	.756	7.13	1.246	7.43	.976
13. How much can you do to get children to follow classroom rules?	7.86	.690	8.00	.926	7.86	.900
14. How much can you do to improve the understanding of a student who is failing?	7.29	.488	7.50	.756	6.71	.488
15. How much can you do to calm a student who is disruptive or noisy?	7.57	.787	7.38	.916	7.57	1.272
16. How well can you establish a classroom management system with each group of students?	8.14	.900	8.13	.991	8.14	.900
17. How much can you do to adjust your lessons to the proper level for individual students?	7.43	.976	7.75	.886	7.57	1.134

18. How much can you use a variety of assessment strategies?	7.29	.951	7.87	.991	7.71	.951
19. How well can you keep a few problem students form ruining an entire lesson?	7.14	1.345	7.50	1.195	7.57	1.134
20. To what extent can you provide an alternative explanation or example when students are confused?	7.71	.951	7.63	.744	7.57	.535
21. How well can you respond to defiant students?	7.14	1.345	7.25	1.165	6.86	1.464
22. How much can you assist families in helping their children do well in school?	6.43	1.397	7.25	1.165	6.86	1.215
23. How well can you implement alternative strategies in your classroom?	7.43	.535	7.63	.744	8.00	.816
24. How well can you provide appropriate challenges for very capable students?	7.57	.787	8.00	.926	8.14	.900
MEAN EFFICACY RATING	**7.49**		**7.68**		**7.47**	

APPENDIX S

Categories and Subcatgories included in Concept Maps for Individual Participants

Category	Subcategory	Areas/Examples	SA Participants	Non-SA Participants
Student characteristics	Academic functioning	Level of mastery; above or below grade level; reading level	05, 06, 08, 10	23
		Examines previous work samples	10	
	Interests, Affinities	Motivators; Personal goals; Incorporate interests into teaching	02, 03, 05, 07, 08, 10	
	Learning styles	Visual, auditory, kinesthetic; Group vs. individual learners	02, 04, 05, 07, 08	
	Social skills	Ability to work in groups; Social cognition	05, 08	
	Personalities	Leaders, followers	02	25
	Gifted students	Discusses differences in instruction for gifted students	06, 10	22, 24
Instruction	Curriculum	Discusses instruction in terms of subject areas	10	21, 22, 23, 25
	Differentiating instructional styles	Visual, auditory, hands-on; centers; manipulatives, varying instructional style	02, 03, 04, 07	20, 24, 26
		Hands-on only		21, 22
	One-on-one	Speech therapy; work one-on-one with students in the classroom	01, 07, 10	20, 22, 23, 24
	Independence	Degree of independence or teacher assistance needed	02, 10	20, 23, 26
	Clustering/ Class grouping	Ability grouping	04, 06, 10	23
	Grouping	Peer buddies; small groups; strategically place in groups	03, 05, 07, 10	20, 21, 22, 24, 26
	Class-wide strategies	Concept maps, graphic organizers	03, 07	20, 21, 22, 24
	Strategies for individuals	Individualized strategies based on student needs	03, 07	
	Strengths	Build on strengths, use strengths to strengthen weaknesses	03, 07	26

	Talk to students about learning	Help students understand how they learn	07	
	Technology	Use technology in learning		25
	Classroom management	Love and logic model		26
	Seating in classroom	Considers students' desk placement	05	
	Special programs and projects	Classwide projects (e.g., Poetry night)		25
	Connect curriculum to real life	Practical projects, build on prior knowledge; teaching citizenship	07	25
	Time	Time involved in teaching and preparing		25, 26
Assessment	Differentiating assignments and tests; giving choices	Choose from an array of projects, adapting assignments	05, 07, 10	25
	Evaluating students	Speech-language assessments and reporting results	01	
	Surveys	Interest surveys, learning styles	03, 04	
Parents	Educating parents	Speech-language awareness	01	
	Involving parents	Regular contacts, class activities that involve parents		25
Teacher characteristics	Patience	Role as teacher requires patience		24
Colleagues	Collaboration	Reviewing speech-language results with teachers	01	
Resources	Support staff	Use of support staff, inclusion teachers	07, 10	24
	School programs	Book room, Title 1 pull-out	07	22
Administrative	Paperwork	Speech-language	01	

REFERENCES

All Kinds of Minds. (2005). *The Schools Attuned Program.* Retrieved October 1, 2005, from http://www.allkindsofminds.org/sa/index.aspx

Artiles, A. J., & McClafferty, K. (1998). Learning to teach culturally diverse learners: charting change in preservice teachers' thinking about effective teaching. *The Elementary School Journal, 98,* 189-220.

BES. (2005) *Comprehensive Planning Document for School Improvement Plan: Plan for Intervention/Remediation/Acceleration, 2004-05 School Year*.

Bitan-Friedlander, N., Dreyfus, A., & Milgrom, Z. (2004). Types of "teachers in training": the reactions of primary school science teachers when confronted with the task of implementing an innovation. *Teaching and Teacher Education, 20,* 607-619.

Boardman, A. G., & Woodruff, A. L. (2004). Teacher change and "high-stakes" assessment: What happens to professional development? *Teaching and Teacher Education, 20,* 545-557.

Boudah, D. J., Blair, E., Mitchell, V. J. (2003). Implementing and sustaining strategies instruction: authentic and effective professional development or "business as usual"? *Exceptionality, 11,* 3-23.

Brighton, C. M. (2003). The effects of middle school teachers' beliefs on classroom practices. *Journal for the Education of the Gifted, 27*, 177-206.

Clarke, D., & Hollingsworth, H. (2002). Elaborating a model of teacher professional growth. *Teaching and Teacher Education, 18,* 947-967.

Curtis, M. J., & Stollar, S. A. (1996). Applying principles and practices of organizational change to school reform. *School Psychology Review, 25,* 409-417.

Daniels, D. H., & Shumow, L. (2003). Child development and classroom teaching: A review of the literature and implications for educating teachers. *Applied Developmental Psychology, 23,* 495-526.

Datnow, A., & Castellano, M. (2000). Teachers' responses to Success for All: How beliefs, experiences, and adaptations shape implementation. *American Educational Research Journal, 37,* 775-799.

Duffy, G. G., & Anderson, L. (1984). Teachers' theoretical orientations and the real classroom. *Reading Psychology, 5,* 97-104.

Fang, Z. (1995). On paradigm shift in reading/literacy research. *Reading Psychology: An International Quarterly, 16,* 215-260.

Fiore, T. A. (2006). *A Study in High Implementation Schools of the Impact of Schools Attuned on Special Education.* WESTAT, Durham, NC.

Franke, M. L., Carpenter, T., Fennema, E., Ansell, E., & Behrend, J. (1998). Understanding teachers' self-sustaining, generative change in the context of professional development. *Teaching and Teacher Education, 14,* 67-80.

Friel, S. N., & Bright, G. W. (2001). Effective professional development for teacher leaders: Lessons learned from K-6 mathematics teacher enhancement program. *In: Developing Teacher Leaders: Professional Development in Science and Mathematics*. Columbus, OH: ERIC

Clearinghouse for Science, Mathematics, and Environmental Education. (ERIC Document Reproduction Service No. ED451031).

Glesne, C. (2005). *Becoming qualitative researchers* (3rd ed.). Boston: Pearson Education, Inc.

Golafshani, N. (2003). Understanding reliability and validity in qualitative research. *The Qualitative Report, 8,* 597-607.

Great Schools. (2006). *Great schools: The parent's guide to K-12 Success.* Retrieved December 31, 2006, from http://www.greatschools.net/cgi-bin/nc/other/1056

Grodsky, E., & Gamoran, A. (2003). The relationship between professional development and professional community in American schools. *School Effectiveness and School Improvements, 14,* 1-29.

Guskey, T. R. (1988). Teacher efficacy, self-concept, and attitudes toward the implementation of instructional innovation. *Teaching and Teacher Education, 4,* 63-69.

Guskey, T. R. (2002). Professional development and teacher change. *Teachers and Teaching: Theory and Practice, 8,* 381-391.

Hall, G. E., Wallace, R. C., & Dossett, W. A. (1973). *A Developmental Conceptualization of the Adoption Process Within Educational Institutions*. Austin, TX: Research and Development Center for Teacher Education.

Hofer, B. K., & Pintrich, P. R. (1997). The development of epistemological theories: Beliefs about knowledge and knowing and their relation to learning. *Review of Educational Research, 67,* 88-140.

Hoffman, J. (2003). Multiage teachers' beliefs and practices. *Journal of Research in Childhood Education, 18,* 5-17.

Kagan, D. M. (1990). Ways of evaluating teacher cognition: Inferences concerning the Goldilocks principle. *Review of Educational Research, 60,* 419-469.

King, J. A., Morris, L. L., Fitz-Gibbon, C. T. (1987). *How to assess program implementation.* Thousand Oaks, CA: SAGE Publications, Inc.

Klonsky, M. (2002). Small schools and teacher professional development. *ERIC Digest.* (ERIC Document Reproduction Service No. ED470949).

Lavigne, N. C. (2005). Mutually informative measures of knowledge: concept maps plus problem sorts in statistics. *Educational Assessment, 10,* 39-71.

Loucks, S., & Pratt, H. (1979). A concerns-based approach to curriculum change. *Educational Leadership, 37,* 212-215.

Marshall, C. & Rossman, G. B. (1999). *Designing qualitative research* (3rd ed.). Thousand Oaks, CA: Sage Publications.

Meehan, M. L., Cowley, K. S., Finch, N. L., Chadwick, K. L., Ermolov, L. D., Riffle, M. J. S. (2004, April). *Special Strategies Observation System-Revised: A useful tool for educational research and evaluation*. Paper presented at the meeting of the American Educational Research Association, Montreal, Quebec. (ERIC Document Reproduction Service No. ED484936).

Mergendoller, J. R., & Sacks, C. H. (1994). Concerning the relationship between teachers' theoretical orientations toward reading and their concept maps. *Teaching and Teacher Education, 10,* 589-599.

Morine-Dershimer, G., Saunders, S., & Artiles, A. J. (1992). Choosing among alternatives for tracing conceptual change. *Teaching and Teacher Education, 8,* 471-483.

Morris, M., Chrispeels, J., & Burke, P. (2003). *Phi Delta Kappan, 84,* 764-767.

Mortenson, B. P., Witt, J. C. (1998). The use of weekly performance feedback to increase teacher implementation of a prereferral academic intervention. *School Psychology Review, 27,* 613-627.

National Staff Development Council. (2001). *NCSD standards for staff development.* Retrieved October 3, 2005, from http://www.nsdc.org/standards/index.cfm

Noell, G. H., Witt, J. C., LaFleur, L. H., Mortenson, B. P., Ranier, D. D., & LeVelle, J. (2000). Increasing intervention implementation in general education following consultation: A comparison of two follow-up strategies. *Journal of Applied Behavior Analysis, 33,* 271-284.

Pajares, M. F. (1992). Teachers' beliefs and educational research: Cleaning up a messy construct. *Review of Educational Research, 62,* 307-332.

Patton, M. Q. (2002). *Qualitative research and evaluation methods* (3rd edition). Thousand Oaks, CA: Sage Publications.

Paul, G., & Volk, T. L. (2002). Ten years of teacher workshops in an environmental problem-solving model: Teacher implementation and perceptions. *The Journal of Environmental Education, 33,* 10-20.

Printy, S. M. (2004). The professional impact of communities of practice. *UCEA Review, 46,* 20-23.

Sandoval, J. (2003). Constructing conceptual change in consultee-centered consultation. *Journal of Educational and Psychological Consultation, 14,* 251-261.

Sparks, G. M. (1988). Teachers' attitudes toward change and subsequent improvements in classroom teaching. *Journal of Educational Psychology, 80,* 111-117.

Trent, S. C., Pernell, E., Mungai, A., Chimedza, R. (1998). Using concept maps to measure conceptual change in preservice teachers enrolled in a multicultural education/special education course. *Remedial and Special Education, 19,* 16-32.

Tschannen-Moran, M., & Hoy, A. W. (2001). *Teachers' Sense of Efficacy Scale.* Retrieved June 15, 2005, from http://www.coe.ohio-state.edu/ahoy/researchinstruments.htm.

Wade, R. K. (1984). What makes a difference in inservice teacher education? A meta-analysis of research. *Educational Leadership, 42,* 48-55.

Winitzky, N., & Kauchak, D. (1995). Learning to teach: knowledge development in classroom management. *Teaching and Teacher Education, 11,* 215-227.

Yamagata-Lynch, L. C. (2001). *Community of practice: What is it, and how can we use this metaphor for teacher professional development?* Presented at the National Convention of the Association for Educational Communications and Technology, Atlanta, GA. (ERIC Document Database No. IR021640).